

# PURCHASING

March, 1944



G. A. RENARD says:  
"RENEGOTIATE  
YOUR THINKING!"  
See page 79





U. S. ARMY AIR FORCE PHOTO

## "EGGS" for ADOLF

**R**EMEMBER this—every bomb dropped on an enemy target, every bullet, projectile or torpedo fired must be replaced by another.

In meeting the added problems incident to the mass manufacturing of munitions, management everywhere is discovering the practical help available through Texaco Engineering Service and Texaco Products.

So effective have Texaco lubricants proved that they are definitely preferred in many fields, a few of which are listed at the right.

Texaco Lubrication Engineering Service is available to you through more than 2300 Texaco distributing points in the 48 States. The Texas Company, 135 E. 42nd St., New York 17, N. Y.

### THEY PREFER TEXACO

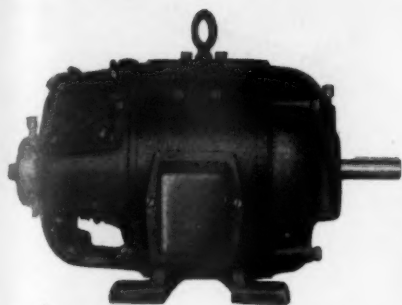
- ★ More Diesel horsepower on streamlined trains in the U. S. is lubricated with Texaco than with all other brands combined.
- ★ More locomotives and railroad cars in the U. S. are lubricated with Texaco than with any other brand.
- ★ More revenue airline miles in the U. S. are flown with Texaco than with any other brand.
- ★ More buses, more bus lines and more bus-miles are lubricated with Texaco than with any other brand.
- ★ More stationary Diesel horsepower in the U. S. is lubricated with Texaco than with any other brand.



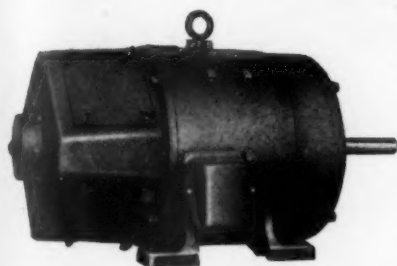
## TEXACO Lubricants, Fuels and Engineering Service

TUNE IN FRED ALLEN EVERY SUNDAY NIGHT—CBS ★ HELP WIN THE WAR BY RETURNING EMPTY DRUMS PROMPTLY

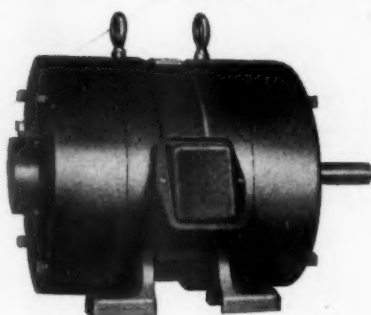
PURCHASING, published monthly by Conover-Mast Company, Publication Office, Orange, Conn. Editorial and Executive Offices, 205 East 42nd St., New York 17, N. Y. Entered as second-class matter August 8, 1942, at the Post Office in Orange, Conn., under the act of Mar 3, 1879. Subscription, \$3.00 a year in the U. S. A. Canada and Foreign \$4.00 Volume XVI. No. 3.



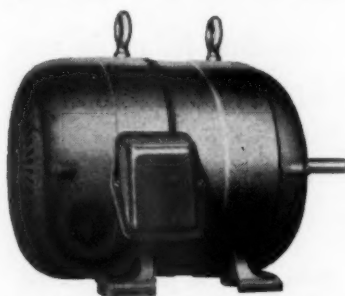
✓ Direct current, drip proof motor



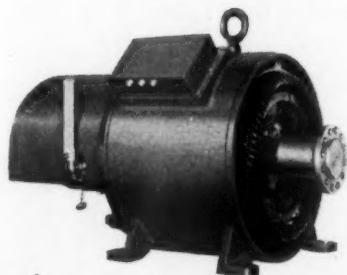
✓ Direct current motor with waterproof protection



✓ 3 phase, drip proof motor



✓ 3 phase, totally enclosed, fan cooled motor



✓ 3 phase, rotating field generator with direct current exciter

# CENTURY

## ELECTRIC MOTORS and GENERATORS Meet Navy Combat and Maritime Specifications

*Century's Marine Experience  
Can Help You, Too*

The types of Century Motors shown on this page are now in service on many Naval and other marine applications. These motors are ruggedly built to meet the toughest conditions of wartime requirements.

Here are some of the applications of Century Motors in the marine field:

Diesel fuel pumps	Pumps for fresh water
Bilge pumps	still
Transfer pumps	Air compressors
Brine pumps	Refrigeration compressors
Cooling water pumps	Steering gears
Fire pumps	Fans and blowers
Capstans	Oil burners
Hoisting machinery	Workshop machine tools

Generators and motor generator sets  
for light, power, and communication

A Century engineer will be glad to assist you with your electric motor application problems. His experience may prove valuable to you — why not call him in today?

### CENTURY ELECTRIC COMPANY

1806 Pine Street  
St. Louis 3, Missouri

Offices and Stock Points in Principal Cities



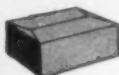
1/20 to 600 horsepower

## DID YOU KNOW?

**NATIONAL**  
supplies large quantities of  
ADHESIVES & STARCH PRODUCTS



for winding fiber Shell Containers



for packaging Small Arms Ammunition



for insulating Armored Tanks



for fabricating fiber Oil Filters & Motor Gaskets



for sizing duck Gun Covers



for making Rifle Envelopes



for binding sand Molds & Cores used in casting Gun Mounts, etc.



for assembling Fuses & Grenades



for laminating paper Bomb Rings



for sealing & labeling fiber Export Cases of Parts & Supplies

&

for many other ordnance applications... some of a secret nature... which contribute to the fire-power of our fighting forces.

Number  
2  
of  
a Series



**THE U. S. ARMY**  
**ORDNANCE DEPARTMENT**  
*provides the FIREPOWER!*



**T**HE COURAGE and bravery of our ground and air forces would be costly and ineffective were it not for the weapons and mobility provided by Army Ordnance.

In no other war agency could a deadline failure in the production or shipment of needed guns, ammunition and automotive equipment mean so much to the safety of our boys on the battlefronts, and to the cause for which they are fighting.

National is proud of the high trust that is placed in its adhesives and starch products for such vital war applications as those shown at the left...and eager to give first call on its research, service and production facilities to the needs of our armed forces.

**NATIONAL ADHESIVES**

DIVISION OF

**NATIONAL STARCH PRODUCTS INC.**

270 MADISON AVENUE, NEW YORK 16, N. Y.





*"Flying" bulldozers and scrapers will quickly repair this bombed airfield.*



*"Come on—Back the Attack  
—Buy War Bonds!"*

## Bulldozers That Fly

An airfield is bombed, but within a few minutes after the "all clear" signal is given Yankee engineers are at work repairing the damage with sturdy bulldozer and scraper units that are small enough to be flown anywhere by transport plane or glider. But repairing airfields is not the only job performed by these husky units—they also help build new airfields and vital supply routes, prepare camp sites, and perform many other chores so important to Victory.

Much of the steel used in these "flying" earthmovers is furnished by Inland to the La Plant-Choate Manufacturing Co., Cedar Rapids, Iowa. Producing steel for tough construction equipment is an old assignment to Inland steelmakers and metallurgists. A large tonnage of the steel shipped for this purpose before the war was Inland Hi-Steel—the steel that builds stronger and saves weight—the steel that will again be used for peacetime machinery when released from the demands of war.



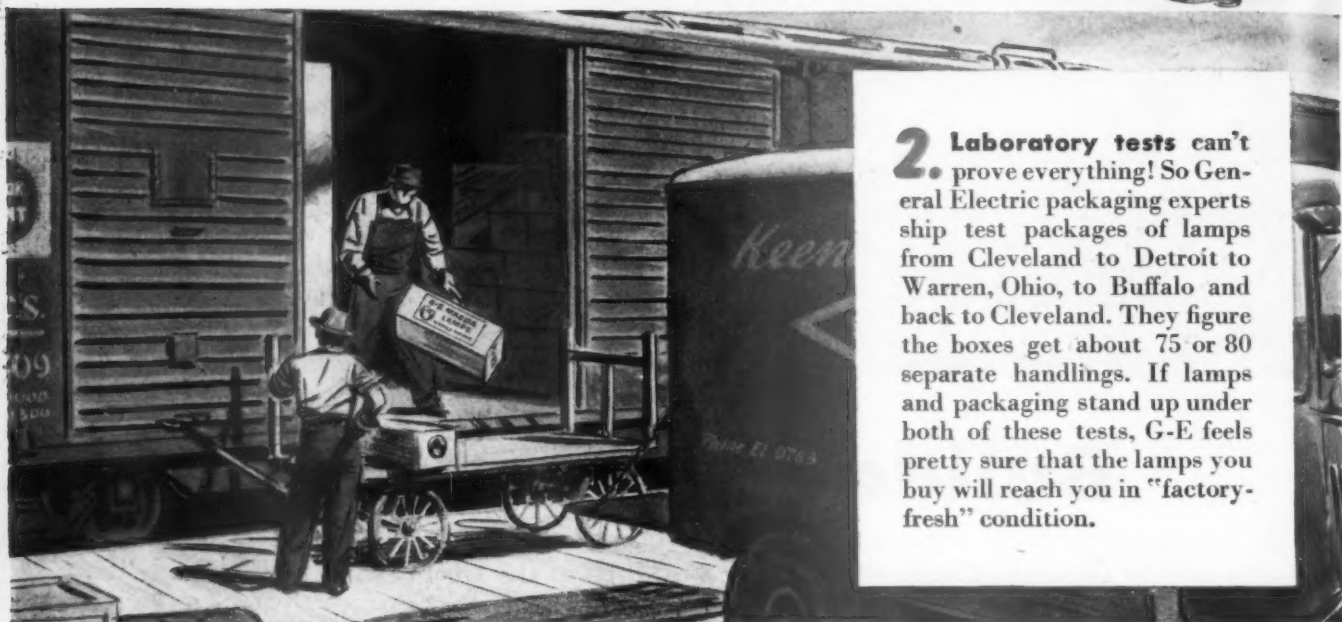
# INLAND STEEL COMPANY

38 S. Dearborn St., Chicago 3, Ill.

Sales Offices: Milwaukee • Detroit • St. Paul • St. Louis • Kansas City • Cincinnati • New York

## MECHANICAL BAGGAGE HANDLER FOR G-E LAMPS!

**1. Packaging materials** may change as a result of wartime shortages, but General Electric Mazda lamps continue to reach you in perfect condition. One reason is constant testing of containers in devices like the "disappearing shelf." When the shelf drops, the box of lamps falls three feet and lands with a crash on a hard wood floor. After a few drops like this, G-E packaging experts have a pretty good idea about how well lamps and containers can take it.



**2. Laboratory tests** can't prove everything! So General Electric packaging experts ship test packages of lamps from Cleveland to Detroit to Warren, Ohio, to Buffalo and back to Cleveland. They figure the boxes get about 75 or 80 separate handlings. If lamps and packaging stand up under both of these tests, G-E feels pretty sure that the lamps you buy will reach you in "factory-fresh" condition.

**3. These are just a couple of the more than 480 tests and inspections** given to G-E Mazda lamps. Why all these tests? Simply to insure uniform high quality and reliability in every lamp wearing the G-E monogram, whether a special lamp for war or the G-E lamps you use in your plant.

THE BEST INVESTMENT IN THE WORLD IS IN  
THIS COUNTRY'S FUTURE — BUY WAR BONDS

"TO MAKE LAMPS  
STAY BRIGHTER LONGER"  
The Creed of G-E RESEARCH



G-E MAZDA LAMPS  
**GENERAL ELECTRIC**

Hear the General Electric radio programs: "The G-E All-Girl Orchestra" Sunday 10 p. m. EWT, NBC; "The World Today" news, every weekday, 6:45 p. m. EWT, CBS.

# Maybe a Small Fixture will Speed Up PRODUCTION



*Illustrated above: operator is burring and polishing 10 parts—spinning against 2 brushing wheels on the same arbor.*

**H**AVE you a brushing job that is now being slowly, laboriously done by hand? Many plants have.

Maybe a small fixture to hold the work would make the operation more automatic—hence faster, better, cheaper.

For instance, a small wooden fixture like the one illustrated can make it possible to brush one or many parts at one time—depending on the size and shape of the work. Many plants have upped brushing efficiency as much as 500% by using this type of fixture. And got a more uniform, better burring, polishing or cleaning job!

It is Osborn's plan to work as closely with customers—in fact, with all indus-

trial brush users—as possible. That was why we originated our famous Osborn Brushing Analysis, whereby we analyze all possible brushing operations and make recommendations.

Today, of course, it is impossible to maintain the *full* service of consultation we have placed at industry's disposal. Our experts simply can't cover the vastly increased ground.

However, we have found that often simply calling attention to the problem suggests a solution.

Of course if you have a critical situation where production is being hindered, we'll do our best to work it into our O. B. A. schedule. There is no charge for this service.

## ***THE OSBORN MANUFACTURING COMPANY***

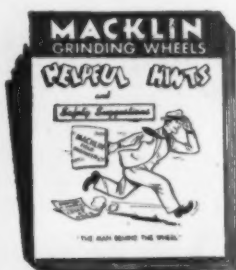
5401 Hamilton Avenue

Cleveland, Ohio

WORLD'S LARGEST MANUFACTURER OF BRUSHES FOR INDUSTRY







This FREE 64-page  
book still available,  
write for your copies.

*"Protect your Production"*

UNIFORM

LONG LIFE

FAST

COOL



*Macklin*

MACKLIN HIGH QUALITY WHEELS  
FOR EVERY GRINDING PURPOSE WILL

**"PROTECT YOUR PRODUCTION"**

*Ask for the services of a Macklin Field Engineer*

**MACKLIN COMPANY**

Manufacturers of GRINDING WHEELS — JACKSON, MICHIGAN, U. S. A.

Distributors in all principal cities

Sales Offices: — Chicago — New York — Detroit — Pittsburgh — Cleveland — Cincinnati — Milwaukee — Philadelphia

This is no time for

# EXCESS INVENTORY!

These days of cancellations, cutbacks, and design changes are hardly the time to increase surplus inventories. It's timelier to start streamlining your stocks — to get them "fluid" for future operations.

For example, why not reduce your inventory by buying a larger percentage of your steel requirements from warehouse? Frasse stocks of cold finished bars, tubing, stainless steel, alloy and aircraft steels and tubing are now in good shape. By buying from these stocks only what you need for immediate production, you avoid leftovers and dead material when contracts change.

Cancellations and cutbacks in your future operations may require quick action. Why be hampered with heavy awkward surpluses? Start reducing yours now by using Frasse inventories instead.



## Frassé

**MECHANICAL AND AIRCRAFT STEELS**

SEAMLESS MECHANICAL AND AIRCRAFT TUBING  
COLD FINISHED BARS • ALLOY STEELS • AIRCRAFT STEELS • DRILL ROD  
STAINLESS STEELS AND TUBING • COLD ROLLED STRIP AND SHEETS • WELDED STEEL TUBING

Peter A. Frasse & Co., Inc. 17 Grand St., N.Y. 13, N.Y. (Walker 5-2200) 3911 Wissahickon Ave., Phila. 29, Pa. (Radcliff 7100—Park 5541)  
50 Exchange Street, Buffalo 3, New York (Washington 2000) • Jersey City, N.J. • Hartford, Conn. • Rochester, N.Y. • Syracuse, N.Y.

GET THIS

# "Know-How" Information

USE COUPON BELOW

FOR YOUR PLANT

☐ **1. DEMOUNTABLE DOLLY** — Single page bulletin, DT-C-401, describes demountable type dolly for changing pair of wheels with motor from under any type of Diesel-Electric locomotive. Dolly has only three principal parts: two side truck frames with wheels, one cross member or bolster. Whiting Corp.

☐ **2. PRODUCTION TAPPING** — Useful data on automatic tapping is subject of handy pocket-sized guide. Contains material on tapping speeds in all materials, suitable lubricants, tables of spindle speeds, basic thread dimensions, etc. The Cleveland Tapping Machine Co.

☐ **3. CONTRACT TERMINATIONS** — Effective controls of terminated Government contracts, as practiced by nationally known company are described in bulletin. Subjects covered include organization, operating procedure, sub-contractors claims, preparation of claim schedules, compiling termination costs, operating procedure, prime claims section, forms used, etc. Remington-Rand.

☐ **4. CARBON SEAL RINGS** — Application of carbon seal rings to bellows type shaft seals is subject of illustrated circular. Features of seal rings are detailed with relation to specific uses, such as steam turbine and air seals, seal noses, etc. Drawings included. Pure Carbon Co., Inc.

☐ **5. POWER PRESS PROTECTION** — Vest pocket 17-page manual discusses factors to cut accidents in power press operations. Considered are press maintenance, feeding methods, safety guards, inspection and supervision, operating personnel, lighting and general housekeeping. Safety guard which incorporates special safety features is described. Junkin Safety Appliance Co. Inc.

☐ **6. PURCHASING RECORDS** — A 12-page bulletin you will find of interest. It describes the Cardineer rotary file which is available in portable floor and desk models, which are said to make for 40% to 60% saving in finding time, giving instant visual control of any item. It describes order expediting and follow up, and purchase control under allocations forms, and commodity purchase records. Special supplier record, the Reveldex, is also described; and, the Savasort, for sorting orders, requisitions, invoices, Diebold, Inc.

☐ **7. DIE-LESS DUPLICATING** — Interesting 40-page manual describes system of metal duplicating without dies. Accuracy in all duplicated parts is guaranteed to tolerance of .001" and is obtained by such features as instant adjustment or removal of any of original contact surfaces; adjustable stops, locked for accuracy; contact surfaces designed for quick alteration and mounting of additional forming surfaces. Specifications, illustrations included. O'Neil-Irwin Mfg. Co.

☐ **8. ACID PROOF CEMENT** — Characteristics, uses and applications of syntho cement are included on engineering data sheet. It is highly resistant to corrosion. Stands heat well and may be used at temperatures as high as 330° F. Sets quickly. In addition to use as mortar for laying chemical brick, it has been used as plaster protective coating to resist corrosive acid fumes, vapors and condensate. Excellent for pointing old brick linings. Electro Chemical Supply & Engineering Co. Paoli, Penna.

☐ **9. SPRINGS** — Technical book on springs covers physical properties, uses, and specifications. It helps buyers to select the right spring for a particular use. Duer Spring & Mfg. Co.

☐ **10. STANDARD STOCK BLANKS** for multiple thread milling cutters, carried in stock, heat-treated and finish-machined are described in 6-page bulletin. Included are both shell and shank types with three standard types of tapers. Detroit Tap & Tool Co.

☐ **11. BAND FILING** — File size catalog Form B101, describes new continuous file broaching operations on metals, alloys, plastics and other materials. May be done on internal and external jobs. Included is display of precision file bands, complete with specifications. Continental Machines, Inc.

☐ **12. FLUORESCENT ACCESSORIES** — New bulletin details complete line of fluorescent accessories and tells how to assure best lamp performance. Technical information on lamps, ballasts and starters is covered along with illustrations and descriptions. General Electric Co.

☐ **13. HEAT TREATING EQUIPMENT** — Fabricated metal products for heat treating, quenching and pickling are illustrated in Bulletin 14. All types of equipment and accessories for degreasing, washing and general handling are included. Standwood Corp.

☐ **14. MILLING MACHINE VISE** — Automatic pneumatic holding device is subject of illustrated circular. Said to cut loading and unloading time as much as 40%, the vise may be used for straightening, stamping, forming, etc. Automatic opening and closing of vise jaws is synchronized with milling machine bed. Controlled clamping pressure, one to 40,000 lbs. The Bellows Co.

☐ **15. PLATFORM TRUCK** — The "Chore Boy". Illustrated brochure treats of platform type shop truck of half-ton capacity which runs all day on one gallon of gas. Its many "Chore Boy" uses in industrial plants are described. Buda Co.

☐ **16. AIR EXPRESS ESTIMATOR** — You will find use for this handy shipping estimator. Operating on slide rule principle, it gives approximate charge for domestic air express from 1 to 1,000 pounds for various distances, and air time. Size—6½" x 3½". Railway Express Agency.

☐ **17. FITTINGS AND TUBING** — New manual, No. 3101, considers change taking place in design of motors, trucks, etc. with consequent increase in vibration and tube movement. These are classified as minor vibration, major vibration and tube movement. Fittings and tubing described are designed for specific problems, and include steel tinned and neoprene tubing. Specifications, prices and diagrams included. Imperial Brass Mfg. Co.

(Continued on page 12)

**PURCHASING** 205 EAST 42ND ST., NEW YORK 17, N. Y.

Please send me the "Know-How" Information checked.

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CITY \_\_\_\_\_ STATE \_\_\_\_\_

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Four pages of "Know How" — 10-12-14-16



## "SELECTIVE SERVICE"



Time was when a file was simply "a many-toothed implement for abrading the surface or edges of metals and other materials." From it grew a limited range of shapes and sizes, with selection of cuts confined principally to "single," "double" and "rasp" cuts of varying degrees of coarseness.

For a large percentage of jobs the mechanic used whatever approximate file happened to be at hand. Since then industrial progress has ranged far and moved swiftly. As "time and work studies" began to raise shop efficiencies, file engineering advanced with equal speed.

Today, with Nicholson setting the pace, files and filing techniques are highly specialized. Research and experiment have produced literally thousands of kinds, cuts and sizes—each designed for some particular type of material and operation . . . for doing work better, quicker, more economically.

Oddly enough, it is in their minuter details—the teeth—that file distinctions have their greatest bearing on the work to be done and the results to be achieved. Height, thickness, spacing, angle, hardness, type of edge, relative depth of overcut and upcut—all make for countless combinations and characteristics.

Choosing The right file for the job is a form of "selective service" that is highly important in efficient industrial production. It can mean untold sayings in man-hours, faulty work, and in the serviceable life of the files themselves.

Nicholson's 80 years' experience in file designing and manufacture has accumulated a vast fund of information that is open to any file-using organization.

### "FILE PHILOSOPHY"—FREE

the widely recognized 48-page Nicholson book, affords production and purchasing heads, foremen and mechanics, much elementary and considerable advanced information on the kinds, use and care of files—including discourses on many special-purpose files for the newer metals and alloys. How many copies do you need for judicious distribution in your establishment?

NICHOLSON FILE CO., 28 Acorn St., PROVIDENCE 1, R. I., U. S. A.  
(Also Canadian Plant, Port Hope, Ontario)

# NICHOLSON FILES

FOR EVERY PURPOSE



# "Know-How" Information, Continued

USE COUPON  
ON EACH PAGE

☐ **18. ARC WELDING**—Packet of loose-leaf sheets are part of series on "Practical Design for Arc Welding" issued by Hobart Bros. Included in Plates 57 through 64 are special machinery base, base for boring mill, diesel engine crank-case. Get set for designing and production departments.

☐ **19. ELECTRONIC TUBES**—Quick-selection chart of tubes is contained in bulletin ET-12. Makes tubes as easy to select as an ordinary light bulb. You will find this a helpful buying guide. General Electric.

☐ **20. FORGINGS** — "Improvement of Metals by Forging" is name of new reference data book. Chapter headings include 1) Forgings—Types and Characteristics, 2) Forging Process Operations, 3) Forging Metallurgy, 4) Applications of Commercial Forging Metals. This book also contains technical information that will be found invaluable in buying. Check No. 20 for your copy. The Steel Improvement & Forge Co.

☐ **21. FIRE CLAY BRICK**—Three new fire clay brick products are described in four page catalog. Said to possess greater spalling resistance, load bearing strength and volume of stability, each is designed for specific application. McLeod & Henry Co., Inc.

☐ **22. PROTECTIVE COATINGS** — Series of 6 bulletins describe coatings for plant maintenance (walls, floors, roofs, etc.), and heavy-duty enamels for use on equipment and machinery ranging from automotive equipment to machine tools and boats. Enamels are said to be highly resistant to weathering, abrasion, oils, food acids, chemical fumes, etc. Manufacturer states Totrust oil paint is perfect replacement for red lead or aluminum. Dampcoat enamel is said to safely paint over damp masonry or metal. Wilbur & Williams Co.

☐ **23. THERMOPLASTICS**—If you are interested in plastics and plastic products you should have this practical manual of 24 pages, with special insert on "Plastics for Present and Post War Products." It will give you a clear understanding of thermoplastics and the qualities of injection molded thermoplastic products. The insert is a quick survey of the relative

properties of the different types of plastics, the forms and combinations in which they are available, their distinctive characteristics and typical applications. Standard Molding Corp.

☐ **24. PAPER GRADES**—Interesting pamphlet lists grades, sizes and weights of paper now being made under WPB Limitation Order L-120. Thirty papers are described as to sheet sizes, roll widths and basis weights. Champion Paper and Fibre Co.

☐ **25. FIRE EXTINGUISHER MAINTENANCE**—Important subject of keeping fire extinguishers at proper efficiency level is discussed in booklet, "Recharging Instructions for Carbon Dioxide Extinguishers". Detail drawings of equipment required for recharging and procedure to be followed are included. C-O-Two Fire Equipment Co.

☐ **26. ELECTRICAL CONNECTORS**—Elaborate 64-page guidebook covers indent type of electrical connectors which are featured by one-piece construction and patented type of indentation used to install them on wire or cable. Diagrams and specification data aid in selection and ordering. Burndy Engineering Co.

☐ **27. POWDER METALLURGY**—Applications and advantages of powdered metal parts are discussed in 32-page brochure. Types of design and specifications for standard forms and other shapes are presented as well as technical data on performance, installation and care. Second part of booklet is devoted to porous bronze, porous iron bearings, and graphite impregnated brass bearings, low friction materials of unlimited possibilities in field of powder metallurgy. Keystone Carbon Co., Inc.

☐ **28. METAL CLEANING**—Selection and use of 19 different cleaners made from water solution of alkalis, soap-alkali mixtures and soaps are subject of Bulletin C-105. These remove oils, greases and inert solid materials in them. Bulletin also discusses metal cleaning processes in general. Hanson-Van Winkle-Munning Co.

☐ **29. ELECTRONIC CONTROLS**—Fundamentals and various applications of elec-

tronic controls are interestingly described in new 12-page bulletin (GEA 4126) issued by General Electric Co. Well illustrated, it explains in simple language the functions of eight widely used industrial-type tubes, and describes many practical applications of electronic control.

☐ **30. LIFT TRUCK**—Pneumatic tired lift truck, 2,000 lbs. capacity, ideal for use in narrow aisles and crowded quarters, which will transport, tier, load and unload almost any commodity is described in 8-page bulletin. Three wheels; turns in own length. Plenty of power—25 h.p. air cooled industrial motor. Willamette Hyster Co. Portland 8, Oregon.

☐ **31. COATED ABRASIVES**—An elementary discussion on coated abrasives—materials involved, processes in manufacture, application, grit sizes and markings—is contained in this pocket size 28-page pamphlet. Buyers and all users of coated abrasives will find this an excellent guide. Behr-Manning.

☐ **32. TEMPERATURE CONTROL**—A brochure posing problems and solutions in eight industries—steel manufacture, plastics, aviation, drug, cosmetic, dehydration, glass and munitions—is issued by Carrier Corp. Interesting data for purchasing agents and others, on the broad subject of industrial air conditioning.

☐ **33. AIRCRAFT MOTORS**—Newly issued 28-page book illustrates and describes Emerson-Electric Aircraft Motors, and indicates their applications. Dimensional and connector charts, and dimensional drawings are included in text, plus specifications for various types. Emerson Electric Mfg. Co.

☐ **34. HOT COFFEE** — Folder describes equipment for providing hot coffee to company workers. Cans are vacuum insulated for storing, transporting and serving. The units may be used for hot storage, thus reducing more investment. Vacuum Can Co.

☐ **35. JACKS** — These tools for lifting, lowering, pushing and pulling are described in new catalog No. 202 "streamlined for warwork." Specifications and many application photographs presented. Catalog is excellent guide for jack selection. Duff-Norton Mfg. Co.

☐ **36. WELD INSPECTION CHART** — An arc-welding chart designed so that operators and inspectors can tell at a glance whether welds are being properly made is recommended for general distribution to all concerned with welding. In two colors, it is 23" x 35". Portion of chart is devoted to "Fleet-Fillet" welding technique. Lincoln Electric Co.

☐ **37. BALL BEARINGS**—Book "R" released by New Departure Division of General Motors lists 10 competitive makes of ball bearings with corresponding New Departure numbers. It also gives information on New Departure bearing dimensional tolerances according to various ABEC specifications, and a section explains the meaning of prefixes and suffixes used with each make of bearing.

(Continued on page 14)

## PURCHASING

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3/44

Check each pages of "Know How" — 10-12-14-16

# MACHINING

# Ceramics

## IS NO PROBLEM



Cutting a coil form on a Walker-Turner Radial Saw; equipped with a special attachment for rotating the workpiece.



One of several groups of Walker-Turner Drill Presses in the General Ceramics plant. These machines are used in drilling and tapping insulators of all types.

## WHEN YOU USE WALKER-TURNER MACHINE TOOLS

At General Ceramics and Steatite Corporation's plant, Walker-Turner Machine Tools are used on a variety of jobs — in machining the Steatite insulators which this Company manufactures for the High Frequency Communication Equipment used by our Armed Forces.

Walker-Turner Machine Tools' wide range of speeds enables General Ceramics to select the optimum speed for their particular work. Their accuracy and spindle stability are important because Steatite is machined in its green, fragile condition before firing. And their simplified design and easy operation help this Company's many women workers turn out a greater volume of high-quality work.

In thousands of other war plants, also, Walker-Turner Machine Tools are doing a notable job in getting production "over the hump". Perhaps they are the answer to some of your machining problems, too. Send for catalog.

**WALKER-TURNER COMPANY, INC.**  
1334 Berckman St., Plainfield, N. J.

**walker-  
turner**  
COMPANY, INC.  
PLAINFIELD, N.J.  
U.S.A.

# MACHINE TOOLS

DRILL PRESSES — HAND AND POWER FEED • RADIAL DRILLS  
METAL-CUTTING BAND SAWS • POLISHING LATHES • FLEXIBLE SHAFT MACHINES  
RADIAL CUT-OFF MACHINES FOR METAL • MOTORS • BELT & DISC SURFACERS



# "Know-How" Information, Continued

USE COUPON  
ON EACH PAGE

☐ **38. SYNTHETIC RUBBER**—Comprehensive 32 page guide to background of synthetic rubber, the general types and their characteristics are covered in "Facts About Synthetic Rubber." Those interested in finding out which synthetic rubber is suited to their specific needs should ask for this booklet. New York Belting & Packing Co.

☐ **39. SPEED TABLE AND TOOL SELECTION**—Chart in three colors available from Vascology Ramet Corporation enables user to determine general cutting range for high-speed steel, Tantung, and cemented carbide cutting tools. The speeds are for broad general use. How many copies can you use?

☐ **40. TAPS**—New catalog No. 67 describes Besley taps in detail, and is characterized as a compendium of useful knowledge for tap users and buyers. The taps are described as being so designed as to speed chip removal, prevent damage and tap breakage. Charles H. Besley & Co.

☐ **41. OVERSEAS PACKAGING**—Technical Data bulletin describes Paisley Exportex waterproof glues for sealing overseas shipments. Exportex is ready to use (no heating), no solvents or mixing required. It is readily applied to bag seams, lining overlaps and carton flaps by hand brushing or regular glue sealing machines, and is said to provide almost instantaneous sealing. Meets export packing specifications.

☐ **42. SAMPLE FELT**—An application chart and sample kit contains swatches of S.A.E. felt types, with specification tables. Felts are made to suit individual requirements and add to precision cutting. Check 42 for free sample. Booth Felt Co.

☐ **43. PURCHASING DEPARTMENT ROUTINE**—Unusual 64-page manual is designed to oil machinery of purchasing department administration. Forms which are easy to maintain and eliminate waste motion are described in full detail. Chapters include—Quotations and Analysis of Prices, Index to Vendors, Purchase Order, Pending Order File, etc. Every Purchasing Agent should have this at his finger tips. Remington Rand.

☐ **44. V-BELTS**—Attractive manual contains all necessary data for selecting proper belt for any job. Included are specifications and illustrations of sheaves and V-belts, engineering data and mathematical tables and price information. Add Catalog V-500 to your file for a convenient reference guide. Pyott Foundry and Machine Co.

☐ **45. PYROMETERS**—New catalog covers TAG electric thermometers, pyrometers, photoelectrically balanced recorders, indicators, controllers, recording controllers, potentiometers for Thermocouples, slide-wire Wheatstone bridges for resistance thermometers, etc. Get copy for your file on recording, controlling, and temperature indicating instruments. C. J. Tagliabue Mfg. Co.

☐ **46. HACK SAW CALCULATOR**—This calculator is designed to show time necessary to make cuts with saws in various steel specifications. SAE, AISI and AMS specifications of steel are listed on reverse side along with machinability factor of these steels. Get copies for your time study and cost departments as well as supervisors and foremen. W. O. Barnes Co., Inc.

☐ **47. DECALCOMANIA**—Informative check chart shows how to select right type of Decal nameplate for 16 different surfaces. Describes application methods, types and uses as well as characteristics which make it resistant to acid, petroleum products, humidity, etc. It is published in file folder form to hold additional data sheets. Meyercord Co.

☐ **48. CORROSION RESISTANT PLASTIC**—Bulletin describes Corresite, a combination of glass fabric and chemically resistant synthetic resins. It is corrosion resistant to wide variety of reagents and has high mechanical strength. It is available in the form of processing equipment of all types, including tanks, trays, pans, pipes, fittings and other conventional processing units. Corresite equipment is available in a variety of shapes. Bulletin shows some of the forms in which Corresite is obtainable. Properties can be modified to suit various applications. Bulletin describes pipe and tubing and fittings available. S. Blickman, Inc.

☐ **49. SAFETY GOGGLES**—Booklet "Right on the Nose" explains quickest and easiest methods of adjusting non-prescription industrial safety goggles, so that workers can wear them in comfort. Training film on the same subject and bearing the same title is also available. Check No. 49 for information on film, and copy of booklet. American Optical Co.

☐ **50. THREAD GRINDING**—"How to do it" bulletin on thread grinding shows typical thread grinding operations, samples of thread grinding done by the Dumore method, wheel dressing, and other practical data that should be in the hands of buyers and users. Check No. 50 for copy of Bulletin No. 25. Dumore Company.

☐ **51. ABSENTEEISM**—Here's an interesting study on what management can really do to reduce absenteeism. It presents the case of labor, and the case of management. Page of forms accompanies the text matter. George S. May Business Foundation.

☐ **52. IRON VALVES**—Six-page brochure describes new line of air furnace malleable iron gate, globe, angle and check valves. These are recommended for 150 lbs. steam pressure at 450° F. Pages include specification chart. Jenkins Bros.

☐ **53. METALLIZING**—Bulletin describes new Mogul electric bonder for preparing hardened metal surfaces for metallizing. Operates on 220 volts, 60 cycle line. Air-cooled electrode holder permits high speed bonding without fear of overheating, pre-hardening or distortion. Works equally well on all metals. Metallizing Co. of America.

☐ **54. DIAMOND DRESSERS**—Useful data on diamond impregnated carboloy dressers is contained in four page folder. Standard holders, information on selection and reconditioning and general advantages covered. Carboloy Co., Inc.

☐ **55. FELT**—Interesting description of felt making, which is accompanied by S. A. E. Felt Standards and recommended uses. Booth Felt Co.

☐ **56. GRINDING COMPOUNDS**—Eleven factors to consider when evaluating grinding compounds are explained in instructive article in house Magazine Grits & Grinds issued by the Norton Company.

☐ **57. AIR CIRCUIT BREAKER**—Selection section of Catalog 1002 issued by I-T-E Circuit Breaker Co., contains rules for approximating the necessary interrupting capacity of circuit breakers on both a-c and d-c systems. Catalog also contains information on protective devices, and individually enclosed circuit breakers, switchboards and automatic reclosing circuit breakers.

☐ **58. MIDGET MILLING CUTTERS** for the metal, wood and plastics industries, made of high-speed steel "ground from the solid after hardening"—all sizes—all shapes, are described in recent bulletin. Severance Tool Co.

(Continued on page 16)

**PURCHASING** 205 EAST 42ND ST., NEW YORK 17, N. Y.

Please send me the "Know-How" Information checked.

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ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

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Check each pages of "Know-How"—10-12-14-16

# 9 Items to Check When Ordering Wire Rope

(Note: Every day, several orders are received which require correspondence and delay because of insufficient information.

Listed below are items which can be used as a wire rope specification check list. Because wire rope is a controlled material, CMP allocation or symbol, also certification, must be included before orders can be entered.)

## WIRE ROPE CHECK LIST

Item	Example
1. Length	120 Feet
2. Diameter	3/4 Inch
3. Number of Strands	6
4. Number of Wires per Strand	19
5. Lay	Right Lang Lay
6. Core	IWRC
7. Kind of Fabrication	PREformed
8. Grade	(Improved Plow Steel) Monarch Whyte Strand
9. Use	Make, Model of Equipment (Plus ... CMP allocation or symbol, also certification.)

Here are all these items for this order.

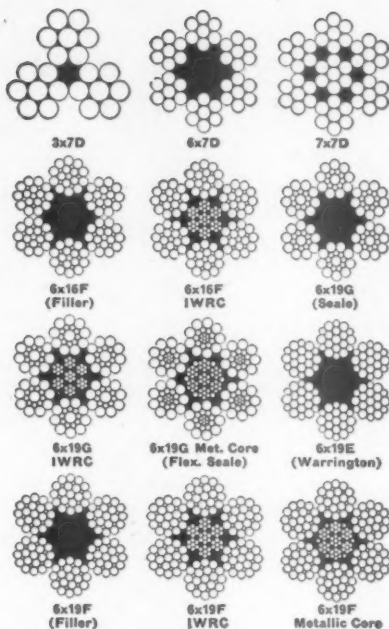
120 feet 3/4-inch 6 x 19 Right Lang Lay with IWRC PREformed Monarch Whyte Strand Wire Rope, to be used for hoist line on Model 45 Lorain Skimmer.

Note: For more complete detailed information on how to specify wire rope, refer to Macwhyte G-15 Wire Rope Catalog, pages 89 to 101.

The above check list is normal and complete as to the specifying of wire rope in peacetime, but it is more important than ever in wartime when it is so difficult to get wire rope.

### STATE USE FOR ROPE—IT HELPS

Always include the type of service for



These are but a few wire rope constructions taken from our G-15 Wire Rope Catalog to indicate the vast number of types and constructions of wire rope that are made. As wire rope manufacturers, we are in a position to help wire rope users obtain the correct rope for their specific needs.

which the rope is wanted. Then if an error is made in listing the proper construction, or if our experience has shown a different construction gives better service for this purpose, we may be able to help you obtain a better rope. In some cases such information today, makes possible your getting a wire rope to meet your needs when the rope you specify is not available but a similar one is available that might do an even better job for you at no additional cost.

## HOW TO MAKE SURE OF CORRECT ROPE FOR YOUR EQUIPMENT

There are hundreds of different sizes, grades, and constructions of wire rope. For many years we have cooperated with wire rope users to get the correct ropes for all kinds of equipment. We have watched these ropes give outstanding service on equipment like yours.

The benefit of that experience may help make your wire ropes last longer, or may help you in specifying what we believe is the finest wire rope you can buy — the correct rope for your equipment: Monarch Whyte Strand PREformed.

Monarch Whyte Strand PREformed has recorded outstanding service records because:

*It's made from selected steels.*

*It's PREformed to reduce internal stresses and to fight rope fatigue.*

*It's internally lubricated to protect wires and strands against corrosion and friction.*

## MACWHYTE PREformed WIRE ROPE

Plus Internal Lubrication

Selected Steels

Tested—Proved

*The correct rope for  
your equipment*

# MACWHYTE COMPANY

## WIRE ROPE MANUFACTURERS

*The correct rope for your equipment*

2918 Fourteenth Avenue, Kenosha, Wisconsin

Mill Depots: New York • Pittsburgh • Chicago • Fort Worth • Portland • Seattle • San Francisco. Distributors throughout the U.S.A.

MACWHYTE PREformed and  
Internally Lubricated Wire Rope

MONARCH WHYTE STRAND Wire Rope  
MACWHYTE Special Traction Elevator Rope

MACWHYTE Stainless Steel Wire Rope

MACWHYTE Braided Wire Rope Slings

MACWHYTE Aircraft Cables and Tie-Rods

MACWHYTE Monel Metal Wire Rope



# "Know-How" Information, Continued

USE COUPON  
ON EACH PAGE

☐ **59. MAGIC GRIP SHEAVE** — New sheave, designed for quick and easy mounting and demounting is described in Allis Chalmers Bulletin B6310. Sheave locks to shaft in one tightening operation. Position clamp fit assures that it is perfectly centered and secure. Design permits sheave to be mounted closer to motor.

☐ **60. STEAM TRAPS**—New 16-page bulletin describes Steam traps for power plants, steam distribution systems, industrial steam processes and marine service. Check No. 60 for copy of Bulletin T-1738. Yarnall-Waring Co.

☐ **61. DIAMOND BONDED WHEEL**—Single page bulletin describes newcomer in the field of diamond bonded wheels. It is known as the Super-Cut, and is said to have unusually long life. Bonding process sets each individual diamond solidly in a special metal. Wheels are available in variety of sizes. Industrial Abrasives Inc.

☐ **62. FIBERGLAS DATA SHEETS**—Grade FF-10, and Grade FF-41, fiberglass fabric and heat resistant thermo-setting resin; variety of shapes can be produced from sheets tubes and rods; material can be molded; available in sheets 36" wide by 36", 42", 60", 84" and 96" long. Also Grade MF, sheet sizes 36" x 36", tubing not available, rod, available up to 1". Sheets detail electrical and physical properties, applications and uses. Formica Insulation Co.

☐ **63. METALS AND ALLOYS**—New 24-page booklet, titled, "The Technical Editor Speaks," explains practical meanings of technical terms used in measuring the mechanical properties of metals and alloys. Describes the tests for measuring the properties of metals and explains how metals and alloys are judged by their properties. International Nickel Co., Inc.

☐ **64. CHEMICALS**—New 144-page catalog "Chemicals by Glyco" has just been released. Manual is complete with formulae, suggestions and tables of useful chemical and physical data. Additions include number of plasticizers for synthetic rubbers, synthetic resins, etc., as well as on esters made by the Glyco Products Co., Inc.

☐ **65. RESIN ESTERS**—16-page booklet covers resin esters almost completely resistant to oxidation now being produced from Staybelite, Hercules Hydrogenated Rosin. Soluble in all commonly used solvents except water and alcohol. They are pale in color, and compatible with a large number of resins, waxes, plasticizers, and film formers. Indicated applications include use as stable tackifiers, and as modifiers for increasing luster and adhesion. Hercules Powder Co.

☐ **66. CARBIDE TOOLS**—New catalog 43C has been issued by Kennametal Inc., which gives complete information on standard tools and blanks, new lines of solid round and solid square precision boring tools, standard and non-standard blanks, and specialties such as lathe and grinder centers, balls, gage tips, etc. Another section shows how to specify and order tools and blanks.

☐ **67. HEAT-TREATMENT OF STEEL**—New Catalog T-621 describes Vapocarb-Hump method of heat treatment of tools, dies or small production parts. Method provides for control of atmosphere, rate of heating, and control of quench point, with claimed advantages of little or no refinishing, negligible rejections, long average tool life. Steel is said to leave the furnace free of pits, scale or decarburization. Leeds & Northrup Co.

☐ **68. BELT WAX**—Bulletins explain how Cantol Belt wax increases power and insures longer belt life. It is said to eliminate slippage 100%, to keep belting pliable in all kinds of atmospheres and under all conditions, and to be suitable for all types of belting. Cantol Wax Co.

☐ **69. GROUND CUTTERS AND HAND CUT ROTARY FILES**—Plastic bound booklet and bulletin illustrate and describe Ford victory models. Carbide cutters give 50 times longer life. M. A. Ford Mfg. Co., Inc.

☐ **70. SAVING SAFETY EQUIPMENT**—12-page booklet tells how to get the utmost use from safety equipment, in six general sections under the following titles: 1) Central Control Systems; 2) Educational Pro-

grams; 3) Salvage; 4) Selection; 5) Inspection; 6) Storage. These are followed by treatment of 17 specific subjects, including goggles, respirators, masks, shoes, shields, etc. National Safety Council, Inc.

☐ **71. WELDING FLUX**—Krembs Fluxing Chart designed for users of welding, brazing or silver soldering, is described as a handy key to finding the best flux to use in connection with a host of metal joining jobs. Chart gives a list of all the common metals and alloys, and recommends the most satisfactory flux to use in different processes. Krembs & Co.

☐ **72. ROTARY FILES**—Each wheel unit of Cardineer rotary file, puts 6000 cards within natural reach of operator, and is said to eliminate drudgery and actually cut operations 40% to 60%. Bulletin describes unit in detail. Diebold, Inc.

☐ **73. WHEELS**—For portable equipment—barrows, carts, trucks, road machinery, etc. Catalog 3E covers French & Hecht, Inc. line.

☐ **74. WEATHERSTRIPS**—Circular describes Mortite Insulating Tape which comes ready for use, unrolls like ribbon, is laid against crevice and then pressed snugly into place. Tacking unnecessary. It is a plastic type material that is said to adhere to any clean, dry surface. Can be re-used. Also can be used for caulking casements, glazing, and for plugging cracks and holes. J. W. Mortell Company.

☐ **75. UNIT HEATERS**—New series of vertical delivery unit heaters with steel condensers is covered by special bulletin. Units range in capacity from 149,000 btu/hr to 600,000 btu/hr. Designed for wartime application, the steel condensers are protected against corrosion by a special coating of lead alloy. Modine Manufacturing Co.

☐ **76. ELECTRICAL SIGNALS**—Buyer's Book on the Uni-Pact line of interchangeable industrial signals covers heavy duty bells from 6 to 12 in. diameter, vibrating horns, and at all electric air-blast horn for high power signalling. Adapter plate fits only standard 4-in. square or octagon outlet box. Schwarze Electric Co.

☐ **77. HAND OPERATED CRANES** of the bridge type are converted to electric drive by a self-contained unit to convert the bridge travel motion described in new literature. The unit can be installed in an hour according to the manufacturer. Cranes equipped with the drive can be "inched" along, spotted over loads, or quickly reversed without undue vibration or shock. Manning, Maxwell & Moore Inc.

☐ **78. SAFETY REGULATIONS FOR WOMEN** In Industry. This is the title of booklet issued to its women employees by the General Electric Company, the purpose of which is to help protect women against the hazards of the shop and also to inform them of safe practices. It is a practical, easy-to-read and easy-to-understand pocket size booklet.

## PURCHASING

205 EAST 42ND ST., NEW YORK 17, N. Y.

Please send me the "Know-How" Information checked.

59 ☐ 60 ☐ 61 ☐ 62 ☐ 63 ☐ 64 ☐ 65 ☐ 66 ☐ 67 ☐ 68 ☐  
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STATE \_\_\_\_\_

3/44

Check each pages of "Know How" — 10-12-14-16



**YOU  
NEED**

# SKILSAW ABRASIVE ROLLS

**For Speed... Precision... Economy**

**ON YOUR  
SURFACING  
JOBS!**

**USE THEM WITH YOUR  
REGULAR POWER TOOLS!**

## For Fast Deburring

• Any punched, drilled or cast hole can be quickly deburred and polished with SKILFLEX Abrasive Rolls! Available in many shapes—rolls, cones and spirals—in so many sizes that they meet every difficult surfacing operation. All SKILFLEX Abrasive Rolls are self-dressing, always provide a fresh, continuous cutting surface until completely worn out.

## For Smoother Final-Finishing

• Hard-to-get-at spots are easy to reach with SKILFLEX Abrasive Rolls... use them with your flexible shaft assemblies. Ideal for cutting and polishing in small holes, flutings, recessed areas. For every metal removing job that demands precision and speed, there is a SKILFLEX Abrasive Roll of the proper size, shape and grade for work that will pass closest inspection.

## Precision Surfacing

• SKILFLEX Abrasive Rolls are especially efficient for contouring, honing and polishing of hard alloy steels, as well as non-ferrous metals and plastics... wherever finishing must be done accurately and fast. Perfect for removing surface irregularities, flash marks, cutting down welds and countless other operations. SKILFLEX Abrasive Rolls cut, shape and polish in one operation... dissipate heat faster, so that they run cooler, and prevent metal burns.

Whenever you need a fast-working abrasive tool to remove metal from difficult recesses in castings or stampings... or to grind away tool marks and surface imperfections... just attach a SKILFLEX Abrasive Roll to one of your regular electric drills, hand grinders or flexible shaft assemblies *and you've got it!* SKILFLEX Abrasive Rolls go on in seconds, do countless metal surfacing jobs *better and quicker* with a *finer finish*—without the need for buying special tools!

SKILFLEX Abrasive Rolls come in various shapes—including cones and spirals—in several sizes and grades for deburring, grinding and polishing... for lapping of dies, sanding and honing in closest quarters. Made of continuous layers of long-wearing abrasive material... self-dressing, so that fresh cutting surfaces are always in contact with the work, right down to the last layer. Call your Skilsaw Distributor for a convincing demonstration.

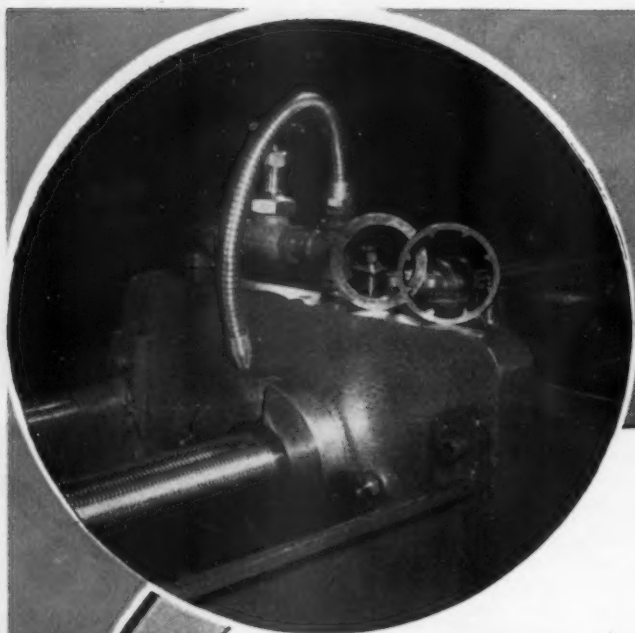
**SKILSAW, INC.**

4761 Winnemac Ave., Chicago 30, Ill.

Sales and Service Branches in All Principal Cities

**SKILSAW**  **TOOLS**

MAKE AMERICA'S HANDS MORE PRODUCTIVE



# 8 at a time

Today Lapointe broaches and broaching machines are producing more precision parts than previous methods of machining. Typical of these production installations are the .4L Broaching Machines at the Springfield Arsenal that are making the apertures for Garand rifles. Shown on the face plate of the machine above is the ring before and after spline broaching. This ring is made from a forging ground to correct thickness. It is then spline broached and each finished ring makes 8 parts. This 8-at-a-time production accounts for 2,240 component parts per hour in one single high speed operation.



The

LAPOINTE

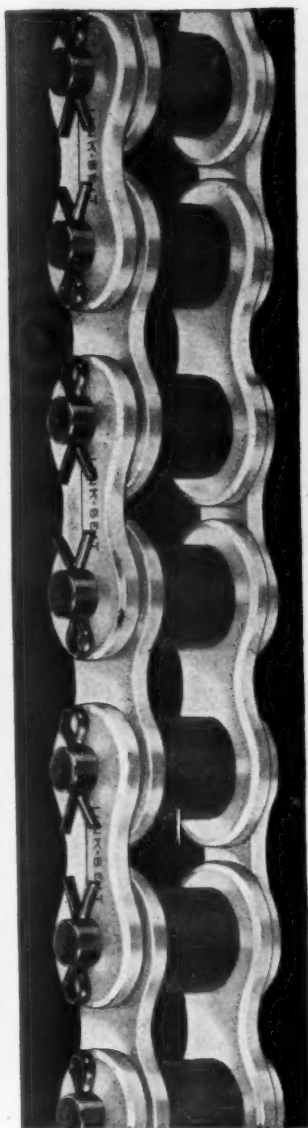
Machine Tool Company

HUDSON, MASSACHUSETTS. U. S. A.

# Silverlink ROLLER CHAIN

## PLAYS VITAL ROLE IN "COOKING"

### STEEL CASTINGS "TO ORDER"



Above: Silverlink roller chain ( $1\frac{1}{4}$ " pitch RC-100), on cut tooth sprockets, serves to open and close the covers of 11 hardening and draw furnaces in the new TESCO heat treating plant. Power is supplied by a hydraulic drive. Silverlink roller chain ( $1\frac{1}{2}$ " pitch RC-120), also drives the transfer car to and from loading and unloading points, and the furnace cars to and from furnaces. Power for these cars is supplied through Link-Belt herringbone speed reducers and Friction Fighter roller bearings.



• Texas Electric Steel Castings Company, specialists in oil industry equipment castings, recently began operations in their new million-dollar heat treating plant, which is equipped with 11 vertical type and four car type furnaces fired by natural gas. Temperature, ranging from 1150 to 1800° F., is observed, controlled and recorded from a remote point through use of the most modern, electrically operated control system.

Link-Belt finished steel roller chains and cut tooth sprockets are used throughout this modern plant . . . as drives to open and close the covers for the vertical type furnaces; as drives to operate the transfer car and the four furnace cars . . . just another of the numerous types of service Link-Belt Silverlink roller chains and sprockets are satisfactorily performing in this vital industry . . . just another proof of the value of 68 years' experience in manufacturing and improving dependable chain drives.

### LINK-BELT COMPANY

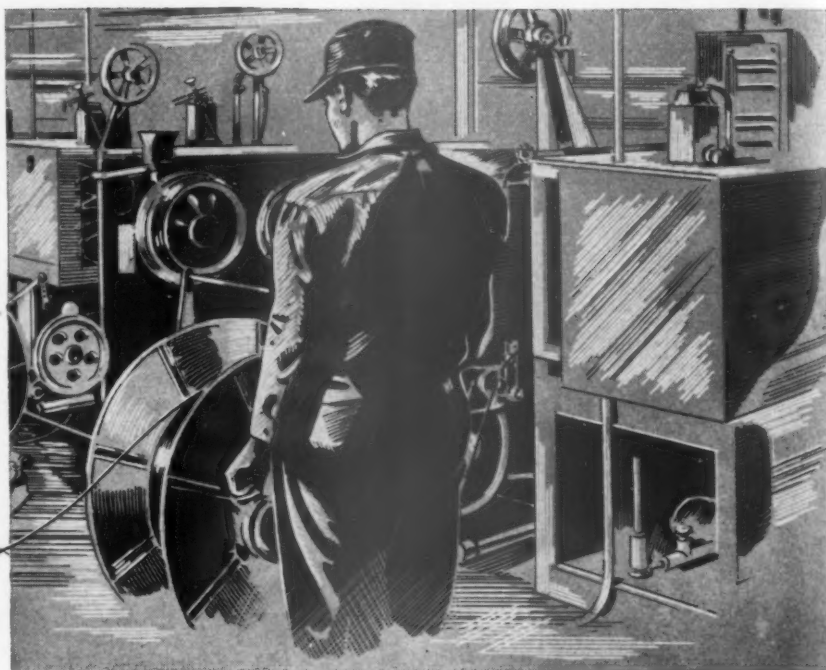
Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24, Toronto 8.  
Offices, warehouses and distributors in principal cities.

In cooperation with the government conservation program, Silverlink roller chain is now furnished in a durable "blackout" finish.





# An old idea, with a new twist in the WIRE BUSINESS...



**M**ANY years in the fine wire business have taught us that all customer problems *cannot* be treated alike.

When a piano string manufacturer comes to Worcester Wire Works, his problem may be one of proper tinning . . . the man who uses wire for staples in book matches or milk bottle caps may be concerned with improved methods to feed wire through his stapling machine . . . the bobby pin manufacturer may want a straighter, cleaner wire . . . the spring manufacturer may have a difficult problem in the forming of music wire.

Each such case may take months of research and trial—and miles of travel to inspect the manufacturer's problem first hand. But working out unusual and important applications of round steel

wire to fit the customer's exact needs is a service for which Worcester Wire Works is noted. It is intelligent, personalized service and it is available to every user or potential user of small wire who wants to improve his product and lower costs.



## Divisions of National-Standard Company

**WORCESTER WIRE WORKS**  
Worcester, Mass.  
ROUND STEEL WIRE, SMALL SIZES

**NATIONAL-STANDARD**  
Niles, Mich.  
TIRE WIRE, FABRICATED BRAIDS  
AND TAPE

**WAGNER LITHO MACHINERY**  
Hoboken, N. J.  
LITHOGRAPHING AND SPECIAL  
MACHINERY

**ATHENIA STEEL**  
Clifton, N. J.  
COLD ROLLED, HIGH-CARBON  
SPRING STEEL



Typical peacetime applications of wire supplied by Worcester Wire Works.  
Milk Bottle Caps • Brushes • Pins • Springs



THE public is due for many pleasant surprises after the war—as new materials are released at the fighting fronts and converted into the products of peace. Perhaps *you* are planning to utilize some of these new materials in your own processes. More power to you, if they give your customers a *better* product—or cost less—or create a bigger market for themselves. But even the newest materials don't just "jump together." Quantity production will call for *more* drilling and reaming, no doubt. After the war, you can order Cle-Forge High-Speed Drills and Peer-

less High-Speed Reamers in the same confidence you have always had—that they will continue delivering top quantity *and* quality production per tool, per grind.

More than ever you can depend on your ♦ Industrial Supply Distributor for all of your thousands of items—using him as your central source instead of scattering your orders among many manufacturers. Thus, as you improve your production with new Materials—improve your relations with your Supply Distributor, too. It's easy—and it *pays*—to

Telephone your  **FIRST!**



The **CLEVELAND** TWIST DRILL COMPANY  
TRADE MARK REG. U. S. PAT. OFF. AND FOREIGN COUNTRIES  
 30 READE ST. NEW YORK 9 NORTH JEFFERSON ST. CHICAGO 650 HOWARD ST. SAN FRANCISCO  
 6515 SECOND BLVD. DETROIT LONDON - E. P. BARRUS, LTD. - 35-36-37 UPPER THAMES ST. E.C.4





# "So men may

Crash landings at sea used to mean "curtains." Now, more and more of our fliers come back . . . thanks to modern life rafts. Today's improved "See-ability" is helping workmen build them faster — and better . . .

Let's suppose you're flying a patrol and run out of gas far at sea. Your engine sputters, dies and—down you come.

A tough spot . . . but almost before your ship hits the water you're clear and aboard the rubber raft stowed away for just such emergencies.

Rugged, sea-worthy, these amazing boats have kept fliers and their crews afloat for weeks! No wonder they can take it—when you realize how carefully they are built; how rigidly materials and workmanship are tested and re-tested!

On this life-and-death job "See-ability" through modern improved lighting is playing an important role. It is helping eyes and fingers do their work faster,

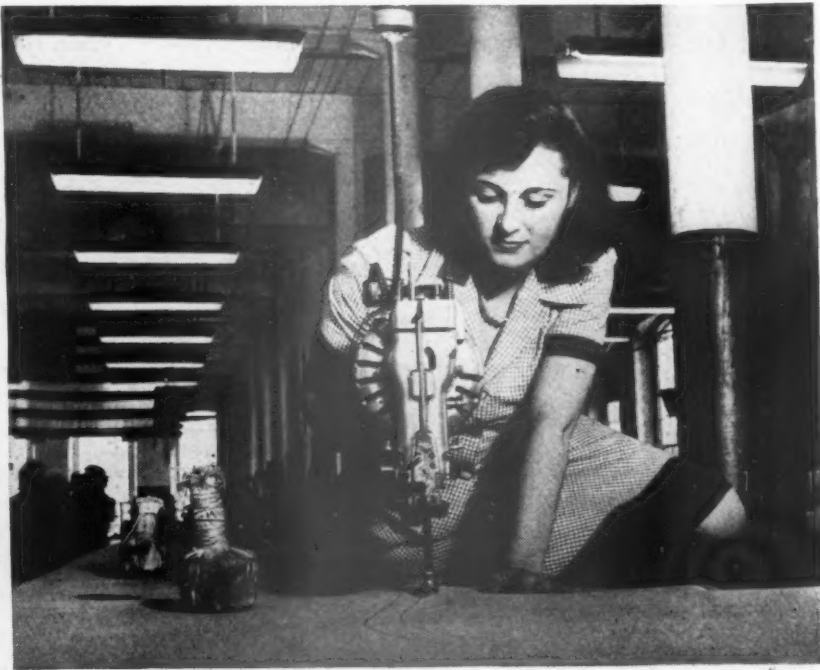
more efficiently. It is speeding production—reducing "rejects," increasing quality.

In fact, in this as well as other vital war work, millions of Westinghouse Mazda Lamps are bringing better "See-ability," helping set new peacetime lighting standards for the industrial world of tomorrow.

You will find some helpful suggestions on industrial lighting in a booklet "See-ability for Indoor Eyes." Write to the Westinghouse Electric and Manufacturing Company, Lamp Division, Bloomfield, New Jersey. *Plants in 25 cities . . . offices everywhere.*

**Easy on the eyes** (*opposite page*) . . . Looking for broken threads in boat fabric. Here the operator must look directly into the light. How significant that Westinghouse Mazda Fluorescent Lamps were chosen for this critical task!

KEEP YOUR DOLLARS FIGHTING . . . BUY WAR BONDS





# live to fight again!"





**PARTS  
OF STEEL  
OR OTHER  
MATERIAL**

★

★  
**RUBBER  
OR  
SYNTHETIC  
RUBBERS**

## For a LIFELONG FRIENDSHIP...

● When metal or other material must work harmoniously with rubber or synthetic rubbers to assure long life, freedom from vibration and frictionless operation in any mechanical assembly—be sure that the materials are firmly bonded by one of the many processes developed by Ohio Rubber Company.

ORCO processes for the making of adhesion parts assure satisfactory bonds between rubber or synthetic rubbers and steel or other materials. All are the result of many years of specialization by an organization that is big enough to serve economically the needs of other industries yet painstaking enough to strive for perfection in process and in final quality.

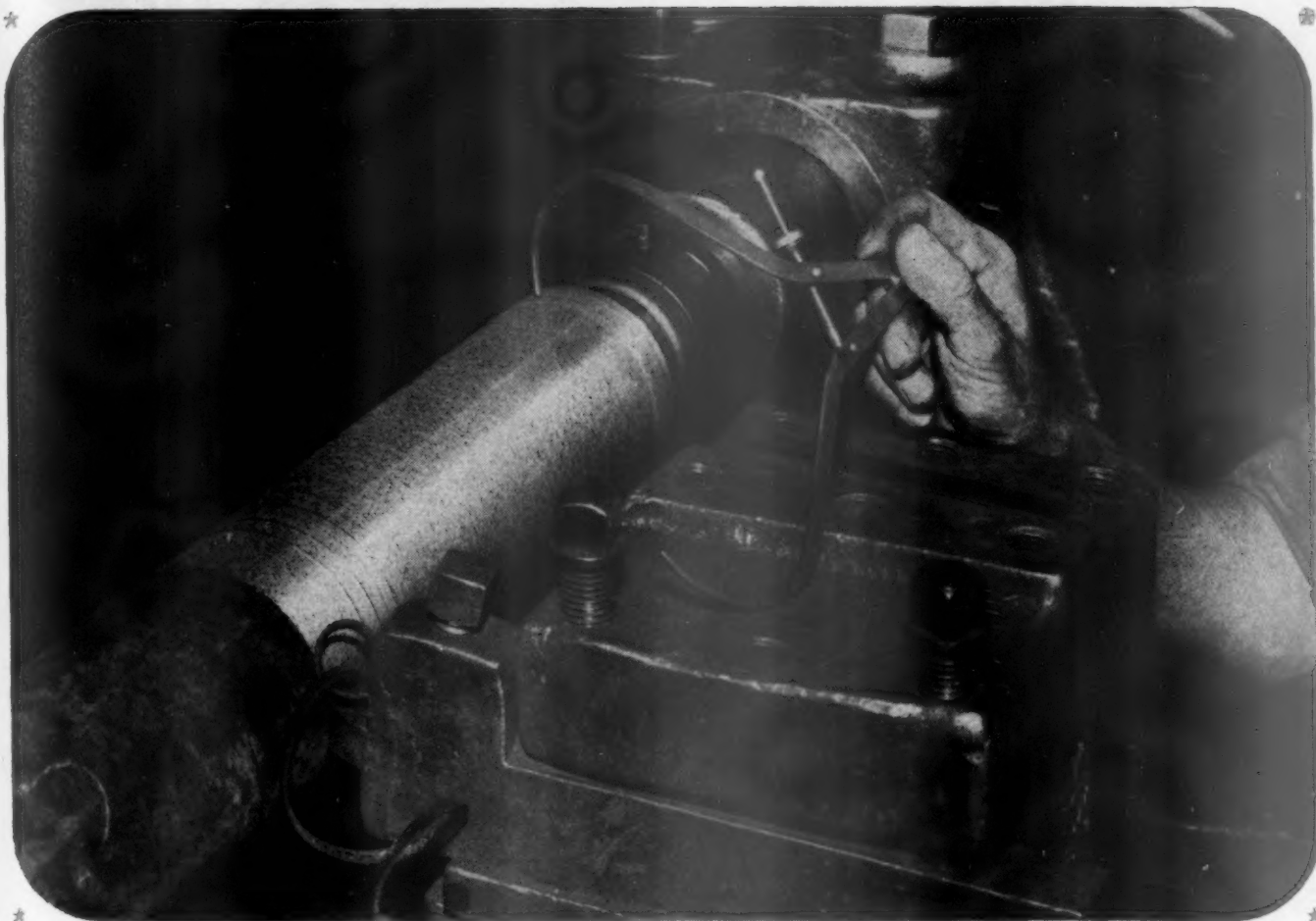


We shall be glad to give you the benefit of our experience on any problem involving molded (hard and soft) or extruded rubber and synthetic rubber, including adhesion of those materials to metallic or other surfaces.

"ORCO-OPERATION" costs you nothing—but saves time and money for you.

# "ORCO-OPERATION"

**THE OHIO RUBBER COMPANY · WILLOUGHBY, OHIO**



## DBL High Speed Steel HAS SET RECORDS ... NOW HERE'S Super DBL!



DEVELOPED ESPECIALLY  
FOR YOUR HEAVY-CUT  
FAST-FEED, HARD AND  
*Tough Jobs!*

THIS is the next step in Allegheny Ludlum metallurgical development of the DBL low-tungsten molybdenum analysis. *Super DBL* is the DBL analysis with the addition of cobalt, and it develops the maximum red hardness—the same *extra margin* of cutting quality—that you were formerly accustomed to get in a tungsten cobalt steel as compared to 18-4-1.



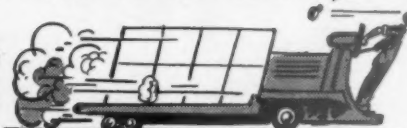
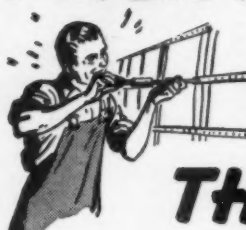




*Super DBL* has been thoroughly tested and proved. In performance, as well as in the conservation of vital alloys, it meets the needs of the times. You'll find it an ideal selection for heavy duty tools—especially suited for roughing or hogging work on hard, gritty materials, such as cast iron and steel; or on tough materials like heat treated

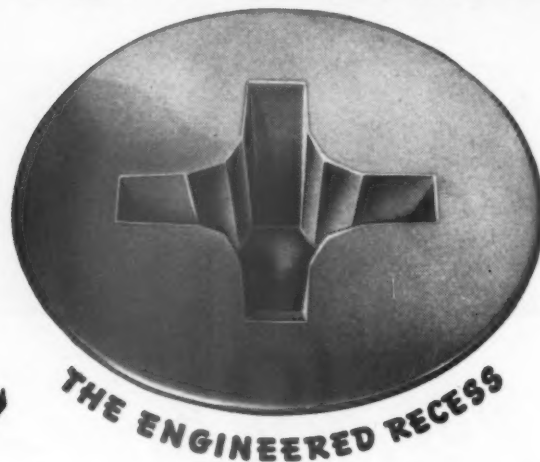
alloy and stainless steels. There is nothing special in its heat treating or handling requirements. • Available *now*—in standard forms and finishes, and in mill-treated tool-holder bits—from Allegheny Ludlum and distributor's warehouse stocks, coast to coast.



**Allegheny Ludlum**  
**STEEL CORPORATION**  
BRACKENRIDGE, PENNSYLVANIA



**WHAT WAS THAT  THAT JUST  
WENT BY? NOT A FOUR  GENERAL  
BUT ANOTHER  LOAD OF  
WAR EQUIPMENT THAT WAS PUT  
TOGETHER  IN RECORD TIME  
SINCE  THAT FAST-DRIVING  
RECESSED HEAD  
SCREW  CAME  
ON THE JOB.....  
IT'S PHILLIPS  **



Sure — the news is swell! But the war isn't over yet. The heat's still on — and production speed is as vital as ever.

One of the surest ways to get more speed in your assembly operations is to put Phillips Recessed Head Screws in the hands of your workers. Hundreds of plants all over the country have standardized on the Phillips screw — and the results have been spectacular. Driving speed has

often been doubled. Vital man hours have been saved. Production has been greatly increased — thanks to the Phillips Recess which makes power or spiral driving practical.

Some advantages of Phillips Recessed Head Screws are listed here. Check them against slotted head screws — or any other type you may be using. You'll quickly see why it costs less to use screws with the Phillips Recessed Head.



**PHILLIPS** *Recessed Head* **SCREWS**

WOOD SCREWS • MACHINE SCREWS • SELF-TAPPING SCREWS • STOVE BOLTS

#### TO MAKE WARTIME QUOTAS AND PEACETIME PROFITS

**Faster Starting:** Driver point automatically centers in the Phillips Recess . . . fits snugly. Fumbling, wobbly starts, slant driving are eliminated. Work is made trouble-proof for green hands.

**Faster Driving:** Spiral and power driving are made practical. Driver won't slip from recess to spoil material or injure worker. (Average time saving is 50%.)

**Easier Driving:** Turning power is fully utilized. Workers maintain speed without tiring.

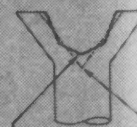
**Better Fastening:** Screws are set-up uniformly tight, without burring or breaking of screw heads. The job is stronger, and the ornamental recess adds to appearance.



**IDENTIFY IT!**



Center corners of Phillips Recess are rounded . . . NOT square.



Bottom of Phillips Recess is nearly flat . . . NOT tapered to a sharp point.

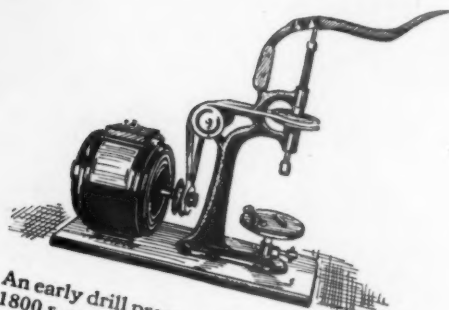
**23  
SOURCES**

American Screw Co., Providence, R. I.  
The Bristol Co., Waterbury, Conn.  
Central Screw Co., Chicago, Ill.  
Chandler Products Corp., Cleveland, Ohio  
Continental Screw Co., New Bedford, Mass.  
The Corbin Screw Corp., New Britain, Conn.  
General Screw Mfg. Co., Chicago, Ill.  
The H. M. Harper Co., Chicago, Ill.

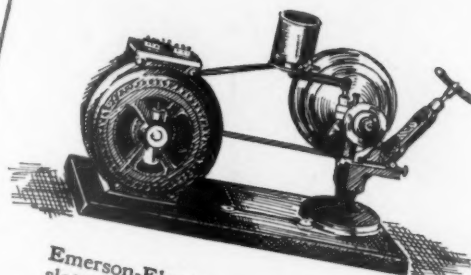
International Screw Co., Detroit, Mich.  
The Lamson & Sessions Co., Cleveland, Ohio  
Milford Rivet and Machine Co., Milford, Conn.  
The National Screw & Mfg. Co., Cleveland, Ohio  
New England Screw Co., Keene, N. H.  
The Charles Parker Co., Meriden, Conn.  
Parker-Kalen Corp., New York, N. Y.  
Pawtucket Screw Co., Pawtucket, R. I.

Phell Manufacturing Co., Chicago, Ill.  
Reading Screw Co., Norristown, Pa.  
Russell Burdall & Ward Bolt & Nut Co., Port Chester, N. Y.  
Sevill Manufacturing Co., Waterville, Conn.  
Shakeproof Inc., Chicago, Ill.  
The Southington Hardware Mfg. Co., Southington, Conn.  
Whitney Screw Corp., Nashua, N. H.

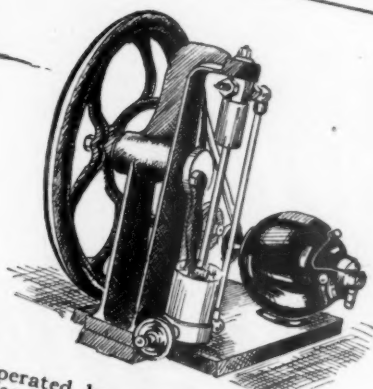
Pages from the  
**EMERSON-ELECTRIC MONTHLY**  
1904 and 1905



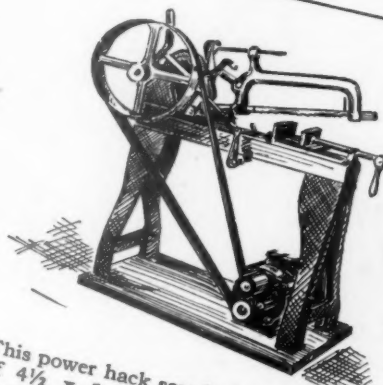
An early drill press operating at about 1800 r. p. m., equipped with  $\frac{1}{2}$  horsepower Emerson-Electric motor.



Emerson-Electric motor drives screw slotter for making "a comparatively small number of small screws." Cone pulleys provide 3 speeds.



Operated by an Emerson-Electric  $\frac{1}{20}$  h. p. motor, this air compressor was able to develop pressure of from 75 to 220 lbs.



This power hack saw had a capacity of  $4\frac{1}{2} \times 5$ . The Emerson-Electric motor was  $\frac{1}{2}$  horsepower operating at 600 r. p. m.

## How Emerson-Electric Helped to Motorize American Industry

Back in the days when the Wright Brothers were experimenting with their first flying machine, and the Panama Canal construction was just getting under way, Emerson-Electric already had a proud record of collaboration with manufacturers of motor-driven equipment.

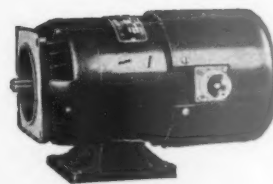
The examples shown above serve to illus-

trate the depth of experience which Emerson-Electric has accumulated.

After Victory, many postwar products of American ingenuity will be powered with Emerson-Electric motors, but until then Emerson-Electric is engaged 100% in creating and producing vital weapons of war.

THE EMERSON ELECTRIC MANUFACTURING COMPANY, SAINT LOUIS

Branches: New York • Chicago • Detroit • Los Angeles • Davenport



Electric motors and power-operated gun turrets for aircraft are being made by Emerson-Electric for service on all the battle fronts of the world.

# EMERSON ELECTRIC

MOTORS • FANS • APPLIANCES



# 3 steps to broader fields of Usefulness

## IMPREGNATING

The word impregnating has several trade meanings. We use it to describe a method of forcing a plastic mass into the fibres of the threads of a woven fabric to accomplish many and diverse purposes — waterproofing, fireproofing, mildew-proofing, strengthening, stiffening, etc.

Impregnating may or may not affect the appearance, flexibility and bulk of the cloth, depending upon the result desired. The possibilities of cloth impregnating are as limitless as the field of chemistry and plastics. Impregnating is one of three major steps in preparing cloth for special needs.

We start with cloth, and through knowledge of processing, plus adequate research facilities, add special properties for special needs.

When your production men discuss new materials in postwar use we are asking you to think about woven cloth — the material that serves you in more ways than does any other, and in many ways for which no other material can satisfactorily substitute. Think of cloth as is, then as joined with the magic of chemistry to solve your material problem.

**CURRENT HOLLISTON PRODUCTION** includes COATED AND IMPREGNATED FABRICS . . . INSULATING CLOTH BASE . . . SEPARATOR CLOTHS rubber, starch-filled, glazed. TRACING AND BLUE PRINT CLOTHS white and blue, ink or pencil. MAP CLOTH, PHOTO CLOTH, self-adhesive. REINFORCING FABRICS. SIGN, LABEL AND TAG CLOTHS, waterproof to take any ink, meet any inking problem. BOOK-BINDING CLOTHS. SHADE CLOTH, impregnated waterproof, opaque, translucent or light proof.

We urge you to consider CLOTH; and invite you to consult with us concerning possibilities and developments for your specific requirements.

*The Holliston Mills, Inc.*  
PROCESSORS OF CLOTHS FOR SPECIAL PURPOSES  
NORWOOD, MASSACHUSETTS  
Sales Agents in Principal Cities





# NEED ANY HELP...

on

# DESIGNING

## NEW PRODUCTS FOR FUTURE BUSINESS?

The Rustless Development Division—concentrating entirely on Stainless Steel, Alloy Steel and Wire products—brings you to engineers the latest grade of Stainless Steel into new products.

Trained Search Engineers with thousands of drawings and specifications, the special service division of Rustless will be glad to render every possible aid in designing Engineers and Engineers special types of products.

Any engineer or architect with reference to the products of Stainless Steel, what grade to use, best conditions under which to use it, or details concerning its fabrication will have our personal and personal attention. If you have a specific problem, call our nearest District Office.

W. H. Rustless, New York City, N. Y. Phone  
W. H. Rustless, Baltimore 13, Maryland

# RUSTLESS

*Producing STAINLESS STEEL Exclusively*

WHEN YOU WANT  
TO KNOW ABOUT  
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**RUSTLESS**

Now available for additional wartime applications, STAINLESS STEELS provide means of improving the performance of our fighting equipment.

RUSTLESS will be glad to help you select the proper grade.

**RUSTLESS IRON AND STEEL CORPORATION, BALTIMORE 13, MD.**

SALES OFFICES: BUFFALO • CHICAGO • CINCINNATI • CLEVELAND • DETROIT  
LOS ANGELES • NEW YORK • PHILADELPHIA • DISTRIBUTORS IN PRINCIPAL CITIES



**LIBERTY TEST UNIT (Type 103)** saves much time in testing *all* instruments carried by aircraft. Top of unit provides handy work bench when open—serves as tool storage box when shut.

Copyright 1944,  
Liberty Motors & Eng. Corp.

## Skilled Hands and Facilities for High Precision Machine Work Electrical Assembly Work

As a manufacturer, Liberty makes highly accurate testing equipment and service tools for aircraft, of which the Aircraft Instrument Test Unit at the left is just one example. These Liberty products are used by armed forces and governments of the United Nations, as well as by airlines and aircraft plants. In addition, as a sub-contractor, Liberty produces quantities of high-precision machined parts and electrical assemblies for other manufacturers. Maybe Liberty's special skills and equipment can help you. We'll be glad to tell you more about them, upon request.

**LIBERTY MOTORS  
& ENGINEERING CORPORATION**  
BALTIMORE-1, MARYLAND

MANUFACTURERS OF AIRCRAFT SERVICE TOOLS AND TEST EQUIPMENT

# TOKIO PAPERS PLEASE COPY.

"... one, just one of several, of the new synthetic rubber plants in the United States is producing at the rate of 99,000 tons a year—an output equal to the amount of natural rubber gathered by 100,000 Malaysians from more than 18,000,000 rubber trees."

Acushnet, and all other American producers and processors of rubber and synthetic rubber, are meeting the challenge

of Japan's rubber-grabbing in the Far East.


Today, Acushnet products fight on every front. Tomorrow, the name Acushnet will appear on a wide variety of precision-molded goods of synthetic and natural rubber for the needs of an America at peace. Acushnet Process Company, New Bedford, Mass.... Processors of Precision-Molded Rubber Goods.



## ★ LET'S SHORTEN THIS WAR

BECAUSE we are Americans; because we do not want this war to go on one minute longer than necessary; let's all get together, pull together and promise together, to

1. Conserve rubber, gas, metal, food and all other essential materials.
2. Buy our share—and more—of WAR BONDS every month.
3. Support our leaders — cheerfully, energetically and with confidence.

In rubber, remember the name 

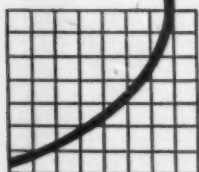
# ACUSHNET



**THAT  
REMINDS ME...**



## **INSUROK HAS HIGH IMPACT STRENGTH**



**P**RODUCT designers who are developing new products and improving existing ones, which require relatively high impact strength, are specifying INSUROK. It has the ability, extremely important in many products, to absorb shock and stand up under rough handling.

And in addition, the light weight and structural strength of Laminated INSUROK make it adaptable to a wide variety of

products which must meet rigid mechanical specifications. Its resistance to the reaction of most chemicals and temperature changes has qualified INSUROK for many chemical applications.

There are many grades and types of Laminated and Molded INSUROK, one or more of which will meet practically every requirement. Richardson Plastics, experienced in working with designers and manufacturers, will be glad to help you determine the grade best suited to your needs. Write for complete information.

*"Facts About Plastics" gives a full, non-technical description of plastics and their use. Every executive concerned with product development or marketing should have a copy. Write for one on your company letterhead today to Dept. C, Melrose Park, Ill.*

# **INSUROK** *Precision Plastics*



*Unless your product is going to be handled with "kid gloves"—it may be advisable to give it the advantage of INSUROK's high impact strength.*

## *The* **RICHARDSON COMPANY**

MELROSE PARK, ILL. NEW BRUNSWICK, N. J. FOUNDED 1868 INDIANAPOLIS 1, IND. LOCKLAND, CINCINNATI 15, OHIO  
DETROIT OFFICE: 6-252 G. M. BUILDING, DETROIT 2, MICHIGAN NEW YORK OFFICE: 75 WEST STREET, NEW YORK 6, N. Y.



*Announcement*

NORTON GRINDING WHEELS OF  
**#57 ALUNDUM ABRASIVE**  
*now available  
to everybody*

Developed by Norton research several years ago, 57 Alundum abrasive was an immediate and outstanding success in wheels for cylindrical, centerless and internal grinding. Limited production facilities, however, made it necessary to restrict the use of the new wheels to those critical war jobs for which their characteristics were most needed.

Now increased production capacity makes it possible to offer Norton grinding wheels of 57 Alundum abrasive for all jobs.

57 Alundum abrasive combines the fast, cool cutting action typical of 38 Alundum abrasive with the durability and toughness of regular Alundum. Thus these new Norton wheels stay sharp longer and hold their shape better. Dressings are few and heavy cuts without burning are possible.

Your Norton abrasive engineer will be glad to tell you just where 57 Alundum grinding wheels will help you.

**Norton Company, Worcester 6, Mass.**

Behr-Manning, Troy, N. Y., is a Norton Division

**NORTON ABRASIVES**

# Fluorescent operating hints

**No. 1** of a series published by Sylvania for all users of fluorescent lighting.



## HOW TO TEST LAMPS AND STARTERS

If a fluorescent lamp blinks or fails to light early in life, it does not necessarily indicate premature lamp failure. The trouble may be a defective ballast or a faulty starter. However, the first thing to do is to replace both the lamp and the starter with units known to be satisfactory. If the new lamp fails to operate with the new starter in place, loose connections in the wiring or ballast may be the reason, and the electrician should check the entire circuit.

To check the questionable lamp and starter that have been removed, test them in a fixture known to be performing properly, or return them to the maintenance shop for checking on a simply constructed test board.

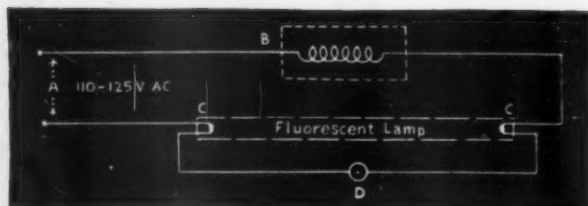


Figure 1

## HOW TO MAKE TEST BOARD

Fig. 1 shows the wiring for a simple test board that can be used to check either lamps or starters. *A* is the connection to the 110-125 volt AC line. *B* is a single-lamp ballast of the same wattage rating as the lamp being tested in *C*, the lamp sockets. *D* is the starter socket.



Fig. 2

## DUMMY-STARTER TESTER

For use with this test board, you can make a dummy-starter tester from a spare or used Sylvania starter by removing the can and connecting the two contacts permanently, Fig. 2. Replace the can and scratch it with a

distinctive mark, so that it will not be mistaken for one of your regular starters.

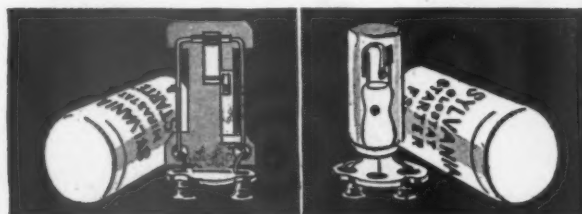
## TESTING THE LAMP

Place the lamp to be tested in lamp sockets *C*, and place the dummy starter in socket *D*. If the lamp is good, both ends of it will glow when the dummy starter is in the socket; and the entire lamp will light when the dummy starter is *quickly* removed. If the lamp does not perform in this way, it is worn out and should be discarded.

## HOW TO TEST STARTER

To test starters on the test board, put a lamp known to be good in sockets *C*, and put the questionable starter in socket *D*. If the starter is good, the lamp will light in less than 30 seconds.

(CAUTION: Test No. 2 starters with 15- or 20-watt lamps only; No. 4 starters with 30- or 40-watt lamps only; No. 5 starters with 6- and 8-watt lamps only; No. 6 starters with 100-watt lamps only; and No. 7 starters with 65-watt lamps only.)



MIRASTAT—Sylvania's thermal-type starter

GLOSTAT—Sylvania's glow-type starter

## STARTERS ARE LAMP-LIFE INSURANCE

The fluorescent lamp starter is an automatic time-delay switch. Mechanically rugged, it enables the fluorescent lamp to establish its lighting arc without the use of high voltage.

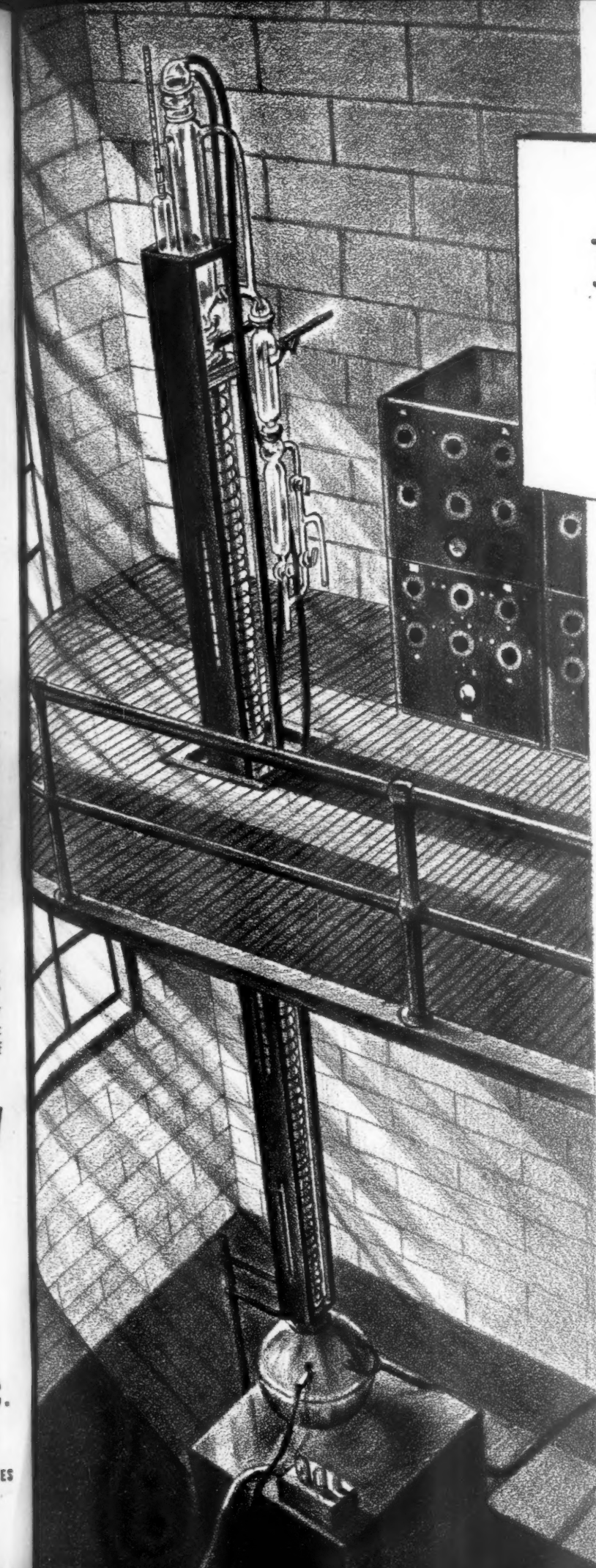
Starters cost only a few cents — but they protect your really important investment in fluorescent fixtures and fluorescent lamps. Defective starters shorten lamp life and cause overheating in ballasts. It pays to test your starters and replace defective ones with Sylvania Mirastats or Glostats.

For Additional  
Maintenance Information  
Send for this Free Booklet



★ **SYLVANIA** ELECTRIC PRODUCTS INC.  
SALEM, MASS.





# Distilling new ideas—



A battery of six 100-plate distillation columns is bubbling busily in the Hercules Experiment Station . . . distilling new terpene derivatives — and new ideas! Ideas which may improve your products or enable you to produce new ones. Thus far, by the aid of these columns, twenty-one new terpene chemicals have been uncovered. *Creative* chemistry such as this has produced important improvements in an impressive variety of products. Adhesives, soap, paper, ink, tires, rayon, paint, concrete, insecticides, textiles, plastics, to name but a few. Chances are that some of the information we've gathered through 30 years of Hercules chemical research can help you work a minor (or major) miracle for *your* product. We'll be glad to furnish you with all the available data if you'll write us about your problem, as specifically as possible. Please address your inquiry to Dept. 43, Hercules Powder Company, Wilmington 99, Delaware.

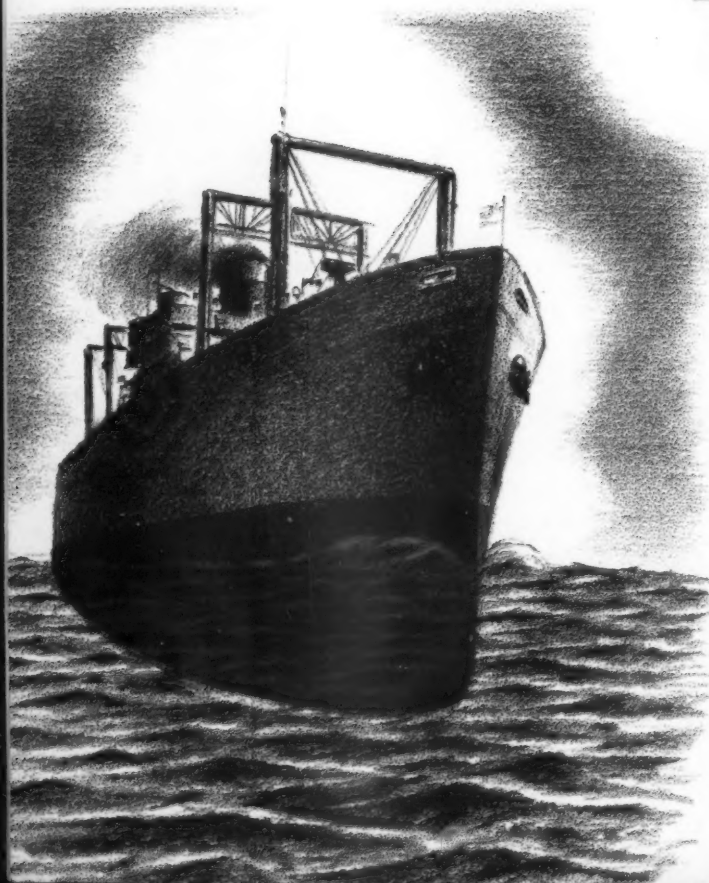


## New "Plastic Peel" safeguards precision metal parts

Thousands of finely machined gears, axles, pins, shafts, and all sorts of metal parts are now protected from rust, corrosion, and scratches by a new plastic compound. The "packaging" operation takes only a few minutes. The metal part is simply dipped in a hot liquid mixture based on Hercules Ethyl Cellulose. When the metal part is removed from this mixture, the plastic coating hardens and seals in the protective oil.

The plastic film can be put on by cold-spraying equally as well as by this hot-dipping technique. It is *tough* and durable, yet can be peeled off the metal part like a banana skin. This development not only offers excellent protection against moisture, corrosion, and shipping damage, but has reduced "packaging" man-hours as much as 90% over previous methods. Write Cellulose Products Department, Hercules.

## Poisoning the barnacle means speedier ships



A new type of paint is helping to combat a menace of the sea—the barnacle. On a 10,000-ton Liberty ship, for example, a growth of barnacles can weigh as much as 30 tons. Barnacles can cut a ship's speed 25%. They can cause such vibration that fire-control instruments become useless. They tie up ships in drydocks for endless man-hours of scraping.

To prevent barnacles from attaching themselves to ships, special paints containing poisons are applied to the hulls. By using Hercules Hercolyn\* or other rosin esters, these paints remain "open" and soft, enabling the poisons to protect the surface of the ship for prolonged periods. Hercolyn is a non-drying, non-volatile, non-corrosive, gloss-producing liquid. For information on the use of this low-cost resin in paints, lacquers, leathers, plastics, inks, and adhesives, write Synthetics Department, Hercules.

\*Reg. U. S. Pat. Off. by Hercules Powder Company



## Bedtime story in lacquer

Waterproof hospital bed sheeting is now benefiting from the many important advantages inherent in nitrocellulose lacquers. Even before sheets became unavailable, the superior merits of nitrocellulose-coated fabrics were recognized.

Nitrocellulose lacquer resists water, perspiration, and chemicals. It possesses excellent flexibility and resistance to abrasion and aging. It is easily coated on all types of textiles, dries quickly in air without application of heat. And the cost of nitrocellulose, already low, is ex-



pected to be even lower in the postwar period. Cellulose Products Department, Hercules.

## Plastic Rivets $\frac{1}{8}$ " tall at $\frac{1}{3}$ the cost



Injection molded rivets of cellulose acetate are another unique application of this versatile plastic material.

The rivets are approximately  $\frac{1}{8}$ " high and  $\frac{100}{1000}$ " thick. Formerly made of nickel, the plastic rivets are produced in a 200-cavity die at only one-third the former cost.

Hercules, manufacturer of fine cellulose acetate for plastics, will furnish the name of this molder on request. Address the Cellulose Products Department.

## To keep white enamels white

After-yellowing in white oleoresinous and lacquer enamels has been successfully controlled for years with the use of low-cost, modified Hercules resins.

These resins—the Lewisol\* Maleates—may also be used to regulate the speed of solvent release, especially from lacquers. Ability to control viscosities in varnishes and other compositions is still another advantage.

The Lewisols are made by modifying rosin esters with maleic alkyds. They may be compounded not only with film-formers such as the cellulose derivatives, but also with drying oils to achieve gloss, hardness, and improved adhesion. A new 16-page technical booklet is available on request from Synthetics Department, Hercules.



\*Reg. U. S. Pat. Off. by Hercules Powder Company





## Poly-pale glycol esters have plastic possibilities

Useful resin esters of excellent hardness, melting point, compatibility, and oxidation-resistance can now be made by combining ethylene and di-ethylene glycol with Poly-pale\* Resin.

The excellent properties of Poly-pale — a polymerized rosin—are transmitted to its glycol derivatives. The esters are hard, pale, high-melting. They are also widely compatible with nitrocellulose, ethyl cellulose, chlorinated rub-

ber, vinyl acetate-chloride copolymer, butyl, and partially compatible with methyl methacrylate as well as with water-dispersible film-formers such as casein, starch, glue, and methyl cellulose.

Suggested applications for the Poly-pale glycol esters include adhesives, lacquers, varnishes, sizes, and plastics. For technical information, write to the Synthetics Department.

\*Reg. U. S. Pat. Off. by Hercules Powder Company



## Commercial washdays made easier with a 20% soap saving

Critical shortages in soap, fuel, and manpower in laundries have focused new attention on Daintex\*, the Hercules laundry assistant. Daintex, which is neutral and harmless to all types of fabrics, replaces up to 20 percent of the soap ordinarily required in commercial laundry practice . . . costs less than the soap it replaces.

By rapid and effective wetting action, dirt emulsification, and detergent-assistance, Daintex cuts down running time on white and colored washes, requires less mechanical agitation, and results in cleaner washes . . . fewer "go backs." More bundles can thus be handled in a given period by the same equipment and labor. To help wartime-burdened operators, Hercules will gladly suggest specific procedures and directions. Write to the Naval Stores Department, Hercules.

\*Reg. U. S. Pat. Off. by Hercules Powder Company

### HERCULES POWDER COMPANY

INCORPORATED

1922 Delaware Trust Building, Wilmington 99, Delaware

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## HERCULES



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CHEMICAL COTTON • EXPLOSIVES • PAPER MAKERS CHEMICALS

PRINTED IN U. S. A.



*Looking ahead with Asbestos*  
**THE MIRACLE MINERAL**  
*and the flight metal*

The metal of the moment is magnesium. The miracle mineral that has helped make this industry's amazing growth possible is...Asbestos.

Millions of square feet of K&M "Century" Asbestos Corrugated and Flat Sheet material, for example, have gone into roofs and sidewalls, interior linings, fire resistant partitions, cover plates and insulators in many of the large magnesium plants from Texas to Michigan. The reason why these important producers turned to "Century" is simple—the necessities of war called for a material that could be rapidly installed, while plans for the future made permanence equally important.

The fact that K&M "Century" Corrugated and Flat Sheets are being re-ordered, time and time again, for plant expansion and new construc-

tion, is ample proof that their performance is satisfying all requirements.

Naturally, this maintenance-free sheet material has been in great demand for *all* types of essential wartime construction, but now that many of these obligations have been met, it is now available in greater quantity than ever before.

Just as magnesium has helped turn the tide of war in the air and is ready to usher in a new age of flight, so are we at K&M looking ahead with the miracle mineral... Asbestos. From today's research will come new and improved products, and a far broader range of service in the "V" years ahead.

\* \* \*

*Nature made asbestos;  
 Keasbey & Mattison, America's asbestos pioneer,  
 has made it serve mankind... since 1873*

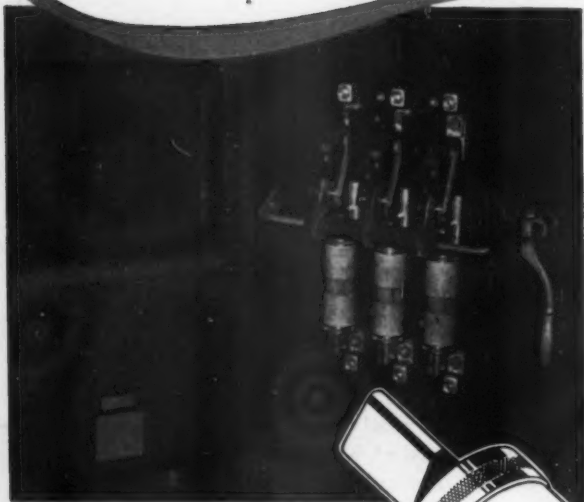
**KEASBEY & MATTISON**  
 COMPANY, AMBLER, PENNSYLVANIA



★ Our Ambler plants proudly fly the Army-Navy "E" flag—an honor awarded K&M employees "for outstanding production of war materials."

# "To Prevent Needless Welder Shutdowns at Globe Shipbuilding Company We Installed BUSS Fuses,"

*Says* CONTRACTOR, MR. FRANK MAHAN OF BENSON ELECTRIC COMPANY, SUPERIOR, WISCONSIN



**Why BUSS Fuses  
Don't Blow Needlessly**



## 10 FEATURES

in the design of the FUSE-CASE help make it possible...



## The SUPER-LAG

development in the FUSE-LINK completes the job.

plus



"At the Benson Electric Company," adds Mr. Mahan, who is manager and chief electrical engineer, "we have standardized on BUSS Super-Lag fuses for the past 7½ years, using them exclusively on all wiring and motor installation jobs."

"We have found that BUSS Super-Lag links and the design of BUSS fuse cases can be depended upon to prevent needless shutdowns of heavy starting equipment such as welders and motors. It is doubly important in shipyards like the Globe Shipbuilding Company, that are rushing material for war, that outages be held to an absolute minimum."

"This installation includes 10—400 ampere feeder circuit switches. Off each is run 24—60 ampere circuit switches serving electric welders."

"From our past experience we are sure that the installing of BUSS Super-Lag fuses at Globe Shipbuilding Company will eliminate many needless production losses."

# BUSS Super-Lag





## You, too, can profit by standardizing on BUSS fuses

Mr. Mahan's experience that led him to specify BUSS fuses at Globe Shipbuilding Company is a typical reaction of men who have tried these fuses. It is proof that shutdowns caused by needless blows can be prevented—and adequate protection can be provided in the same protective device.

As for BUSS Super-Lag fuses—the experience of thousands of plants throughout all industry has proven time and again that by using them you can obtain trouble-free protection at a lower overall cost than with any other renewable fuse.

They require no maintenance or periodic inspection. They don't open needlessly. If one opens, you know there is some fault that needs correction.

### Here is Why BUSS Super-Lag Fuses Greatly Reduce or Entirely Prevent Needless Blows

The fuse case is designed to insure good contact on the link, even when the fuse is renewed by an inexperienced person—and it is so de-

signed that vibration or heavy overloads or the constant heating and cooling of the fuse will not permit poor contact to develop. Thus, excessive heat which causes fuses to blow when they should not is prevented.

The fuse link used is the famous, "BUSS SUPER-LAG." It has lag-plates attached which give it a long time-lag so that unusually heavy starting currents or other harmless overloads will not cause the fuse to blow.

### And Here is How to Solve the "Shutdown Problem" in Your Own Plant

Pass the word along that all purchase records dealing with circuit protective devices should be immediately changed to call for BUSS Super-Lag Renewable fuses. Then, as fuses are replaced or new installations made, your plant will automatically get the benefit of the carefree, trouble-proof protection that BUSS Super-Lag fuses give.

BUSSMANN MFG. CO., University at Jefferson, St. Louis, Missouri, Division McGraw Electric Company.

# FUSES

Sold Through Wholesalers

# new... ELECTRONIC

## Confirms Ability of Insulation to Withstand Shorts Due to Voltage Surges

• Now, a new electronic test shows visually that the insulation of every coil, every turn, and every phase of a G-E Tri-Clad motor winding has the strength to withstand the voltage surges that are a cause of shorts and grounds in service. Thanks to this new G-E development, no undisclosed insulation weakness can "get by."

The new test method\* subjects each coil in the assembled motor to a steep-front surge impulse, similar to a high-voltage transient of actual service. A cathode-ray oscilloscope indicates the performance of the winding under this sudden stress.

Only a motor with perfect insulation, and with the phases symmetrical, will give a single, clear-cut "standing wave" on the screen. The test indicates not only the condition of turn-to-turn insulation, but also that of coil-to-coil and coil-to-ground insulation.

This test is now applied to all G-E Tri-Clad motors, and to many other G-E motors and generators, as a regular step in production. Its advantages are so great that its use is widening throughout the motor industry.

\*For complete details, see "Insulation Testing of Electric Windings," Trans. of A.I.E.E., Vol. 62, pp. 203-206.



### HERE'S HOW WINDING STRENGTH SHOWS UP ON THE OSCILLOSCOPE "WINDOW"

Oscilloscope "traces" coincide when two windings are electrically symmetrical.

Separation of traces shows a one-turn short circuit.

Further separation shows one-coil short circuit.

Result with one winding short-circuited to ground.



# TEST Tells the "Inside Story" of Motor Windings



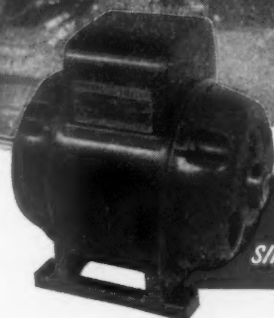
Production-line test of G-E Tri-Clad motors with new electronic tester. Operator turns transfer switch to take reading on each phase.

## An Individual Check of Each **TRI CLAD** Motor Gives Extra Assurance of Unfailing Service

At each Tri-Clad motor factory, a production-line test setup like the one shown above is regularly in service. The motor windings are checked by this new test as an additional step in G.E.'s strict testing procedure. Other winding tests include the high-potential and high-frequency tests, in addition to many quality tests made on Formex\* wire and other winding materials before they are used in the motor windings. Whenever you buy or specify a G-E Tri-Clad motor for your plant or machine, you get extra assurance of unfailing service. General Electric Company, Schenectady, N. Y.

\*Reg. U. S. Pat. Office.

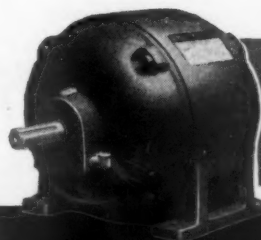
Every week 192,000 G-E employees buy more than a million dollars' worth of War Bonds.



**TRI CLAD**  
SINGLE-PHASE MOTOR



**TRI CLAD**  
TOTALLY ENCLOSED  
MOTOR



**TRI CLAD**  
POLYPHASE INDUCTION  
MOTOR

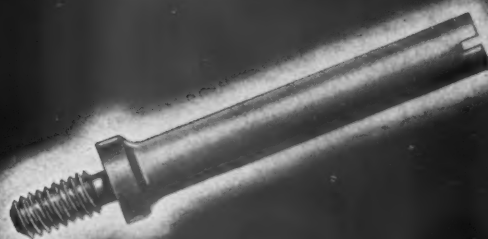
# GENERAL ELECTRIC

750-234-8030





## LET SCOVILL INGENUITY IN COLD-FORGING SERVE YOU



"Case example" #17... more each month

**C**OLD-FORGED FASTENINGS, special and standard, made to meet your specific requirements, are our business. To serve you effectively, by helping you determine whether your fastenings should be a standard type or one especially designed, is also our business. Your precise choice of both fastening device and source may be the "making" of your finished product, for no assembled product can be better than its fastenings.

In "special" fastenings, Scovill has the skilled design engineers to understand and fill your exact requirements. Shown above is one of many instances where Scovill ingenuity in cold-forging delivered the goods for minimum money—materials—motions. Believe it or not, the

part illustrated was made by cold-forging and secondary operations.

A Fastenings Expert from our nearest office will gladly serve you. Call him NOW, for each day the practical problems of your postwar production draw closer. He will help you to the limit our war commitments permit and tell you when and how we can serve you.

Many Scovill customers have saved time, trouble and money by calling in Scovill to plan their fastenings when the product was still in the design stage. A Scovill Expert will gladly help you do likewise.

## SCOVILL MANUFACTURING COMPANY

### WATERVILLE SCREW PRODUCTS DIVISION

WATERVILLE 48, CONN.



TEL. WATERBURY 3-3151

NEW YORK, Chrysler Building • DETROIT, 6432 Cass Avenue • CHICAGO, 1229 W. Washington Boulevard • PHILADELPHIA, 18 W. Chelton Avenue Building  
PITTSBURGH, 2882 W. Liberty Ave. • SYRACUSE, Syracuse-Kemper Insurance Bldg. • LOS ANGELES, 2627 S. Soto St. • SAN FRANCISCO, 434 Brannan St.

# GASKETS

... for all sealing jobs at temperatures up to 300° F.

A GLIMPSE around this page will give you a "speaking acquaintance" with the kinds of gasket materials Armstrong makes. There's cork, of course. There's also synthetic rubber . . . cork-and-rubber . . . felt . . . fiber.

Having developed some *fifty compositions* of these materials, Armstrong can supply the right gasket for *any* sealing job where the operating temperature does not exceed 300° F. That covers a lot of territory—including, very likely, a number of places in the equipment your plant is producing.

A good reason for selecting Armstrong as your source of sealing materials is this; Armstrong's Compositions with the right physical properties for hundreds of applications are available not only in the forms of gaskets but also in sheets, roll goods, tapes, molded parts, or extruded rings.

To become more familiar with these materials, send for "Armstrong's Gaskets, Packings, and Seals." Your request will bring you a copy by return mail. Write Armstrong Cork Company, Industrial Division, 7203 Arch Street, Lancaster, Pa.

★ ★ ★

## Armstrong's Industrial Products

**GASKETS, PACKINGS, SEALS, and MECHANICAL SPECIALTIES** of Cork, Synthetic Rubber Compositions, Cork-and-Synthetic-Rubber Compositions, Cork-and-Rubber Compositions, Fiber-Type Materials, and Rag Felt Papers.

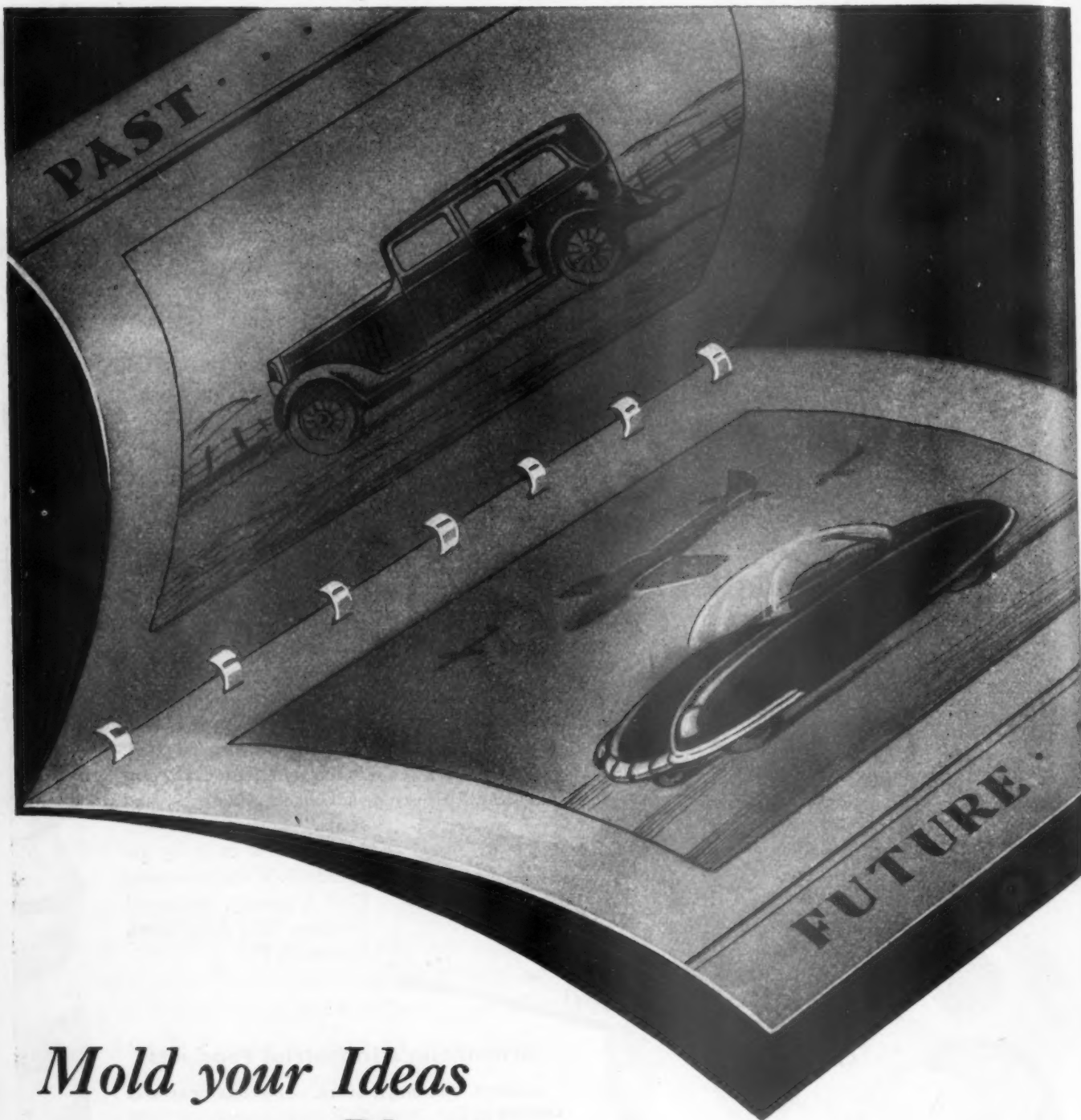
**RESILIENT SURFACINGS** (for desks, counters, etc.) and **FLOORINGS** (for buses, railway cars, etc.) of Linoleum, Linowall, Linotile (Oil-Bonded), Airoflor, Armoflor, Asphalt Tile, Automat, Cork Tile, Monowall, and Traffex.

**TEXTILE MILL SUPPLIES** - - - **SHOE MATERIALS**  
**ADHESIVES** - - - **GLASS INSULATORS**

... These are only a few of the more than 360 products of the sixteen plants of the Armstrong Cork Company.

# ARMSTRONG CORK COMPANY

INDUSTRIAL  DIVISION



## *Mold your Ideas into Plastics*

From first idea, all the way through design, molds and complete finish, the twenty-two years experienced Reynolds organization will expertly engineer your plastic problems . . . today . . . tomorrow.

Plastics fabrication by compression, injection, extrusion, sheet forming.



LET'S ALL BACK THE ATTACK  
BUY WAR BONDS

### REYNOLDS MOLDED PLASTICS

CAMBRIDGE, OHIO

SALES OFFICES IN ALL PRINCIPAL CITIES

DIVISION OF REYNOLDS SPRING CO.  
JACKSON MICHIGAN



# No rest under this bed for a STAR



Start-stop, start-stop, slow-fast, fast-slow! There's never a dull moment for the Star motor as it drives the bed of the R. Hoe & Company, Inc.'s powerful Monarch II Matrix Roller back and forth at the speed needed for each mat-molding job. But the 3 h.p. motor can take it, because it's built that way—sturdy and trouble-free. And thanks to its welded construction, which eliminates the need of special castings and patterns, Star fits that limited space under the 35" x 46" table to a "T," as it fits every tight spot it's called on to fit.

Whether you require a ½ or 200 h.p. motor, Star can provide you from its standard line or from the unlimited line of special motors made possible by our unique welded construction. Write us about your requirements—for any way you look at it—in the tight spots it's a STAR.

STAR ELECTRIC MOTOR COMPANY • Bloomfield, N. J.



POWER **PACKAGED** AS YOU NEED IT



# STAR MOTORS

# From beginning to end you can get it from Crane

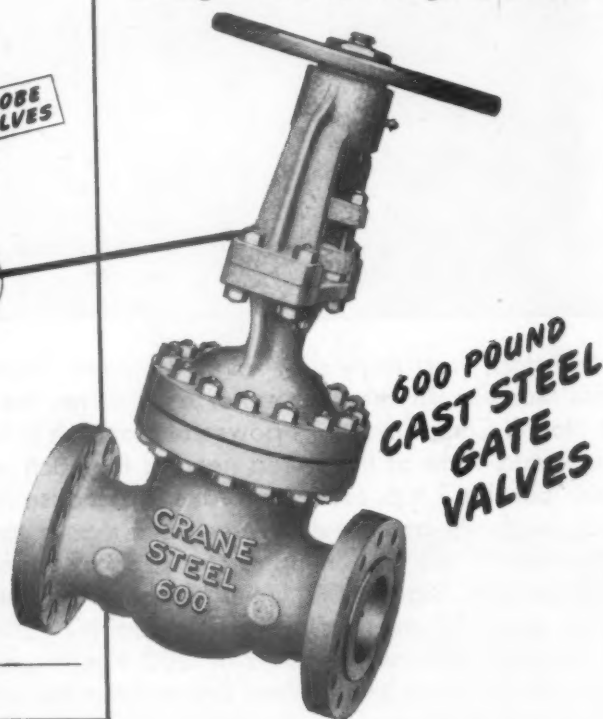
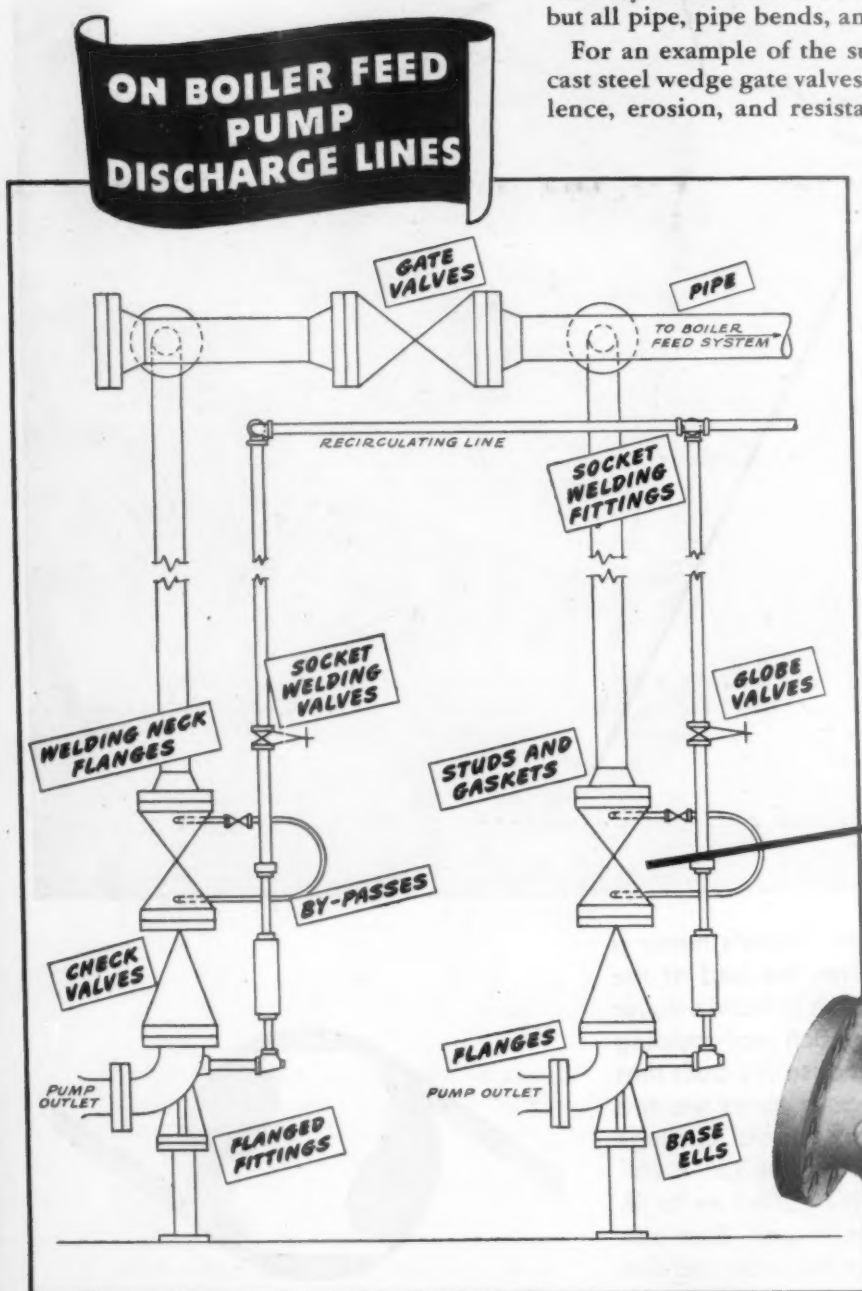
One high standard of quality throughout . . . One source  
of supply . . . One responsibility for all materials

**W**HEN you need a single fitting or a piping system, you stand a better chance of getting exactly what you need from Crane. The unusual completeness of the Crane line sees to that—as indicated by this boiler feed hook-up. Not only the valves and fittings, but all pipe, pipe bends, and other materials are supplied by Crane.

For an example of the superiority of these materials, take Crane cast steel wedge gate valves. Straight-through ports minimize turbulence, erosion, and resistance to flow. Strong tee-head disc-stem connection, easily lubricated ball-bearing yoke, and ample non-corrosive stem bearings assure smooth operation. The disc is fully guided and accurately seated by extra long guide ribs.

Yet all Crane products have similar characteristics of modern design that mean better performance and greater freedom from trouble. Choose all your piping needs from the world's largest selection—with quality assured by Crane Co.'s 89-year leadership in the piping materials field.

CRANE CO., General Offices: 836 S. Michigan Avenue, Chicago 5, Illinois



# CRANE

VALVES • FITTINGS • PIPE  
PLUMBING • HEATING • PUMPS



**RESEARCH**

The Greeks had no word for it and neither do we, more's the pity. Let's coin a word and a definition by starting with Webster's definition of research—"diligent protracted investigation, especially for the purpose of adding to the sum of human knowledge."

Now let's add, "More especially creation of new substances and discovery of special services they can perform better than any previously known substance".

There you have Formica research which has been going on more than 30 years through peace and war.

Formica laminated plastic has been created in various grades suitable for many uses in many industries. Strength, lightness, easy machinability, dielectric properties, acid and moisture resistance and stable dimensions are characteristic properties which vary somewhat according to the purpose of the grade.

Acquaint yourself with the past performance of Formica and its possibilities for your new or improved peacetime product.

"The Formica Story" is a moving picture in color showing the qualities of Formica, how it is made, how it is used. Available for meetings of engineers and executives.

## THE FORMICA INSULATION CO.

4666 SPRING GROVE AVENUE

CINCINNATI 32, OHIO







## A SYMBOL OF COOPERATION

To the men and women of Thermoid, the Thermoid seal is more than just a trade mark and a product identification. It is a symbol of individual responsibility among all company employees: management, engineering, production and sales.

This concept of the Thermoid seal produces cooperation among employees. Every Thermoid employee realizes that his own business welfare directly depends upon the approval and acceptance of Thermoid Products by the user... that men and management who manufacture inferior merchandise also manufacture the elements of their individual failure.

The protection of this Thermoid seal is therefore recognized as the personal duty of every member of the Thermoid group. Uniformity in product manufacture, meticulous inspection, prompt and personalized attention to customers, and all of

the other things that have made for consistent Thermoid progress are in large measure traceable to this concept of the Thermoid seal.

No matter what the uncertainties ahead Thermoid will continue to make the finest industrial products possible. 1944 finds Thermoid with the largest personnel and facilities in its history. We are confidently hopeful that during this year, we will have the opportunity of further demonstrating the cooperation symbolized in the Thermoid seal—the cooperation that has caused Thermoid customers to say:—"It's good business to do business with Thermoid."

THE THERMOID LINE INCLUDES: Transmission Belting • F.H.P. and Multiple V-Belts and Drives • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Sheet Packings • Industrial Brake Linings and Friction Products • Molded Hard Rubber and Plastic Products.

# Thermoid Rubber

DIVISION OF THERMOID CO.  
TRENTON, NEW JERSEY

*It's Good Business to do Business with Thermoid*

# THE *Carbide* AGE . . .

## GREATEST STEP IN THE EVOLUTION OF CUTTING TOOLS

Miracles in metal working have revolutionized production . . . miracles that would have been impossible before the perfection of carbide cutting tools! Steel alloys of extreme hardness (Brinell 405) are being machined today to "high polish" finishes with carbide tools, at rates ten times faster than formerly possible.

Cutting tools of "yesterday" are obsolete in competition with the speed-machining that is possible with modern WESSON Carbide Cutting Tools.

Industry is moving into "The Carbide Age" fast . . . WESSON pioneering, experience and leadership in design and production of carbide tools, are now aiding many manufacturers to plan complete carbide re-tooling based on greatly increased metalworking feeds and speeds . . . with WESSON Carbide Tools capable of production schedules that would have seemed fantastic three years ago.

Re-tooling programs planned now will set up priorities for your tool requirements later. Phone, wire or write

WESSON COMPANY, DETROIT 20, MICH.  
(Ferndale Station)



**Speeds and feeds** that surpass those used in woodworking are now possible in metalworking . . . WESSON Carbide Tools are machining the new, tougher, harder metals faster . . . with finer finishes . . . to closer tolerances for higher precision . . . at

less cost than ever before in history. With WESSON Carbide Cutting Tools, less frequent re-grinding is required . . . tool life is longer . . . production is stepped up, while costs are knocked down. Truly, this is "The Carbide Age" of progress in industry!



*Leland*

**ELECTRIC MOTORS**

**CREATIVE ELECTRICAL ENGINEERING**

Entirely new designs, based on current war models, and often engineered to individual specifications will be developed after the war. Leland stands ready to "pioneer" new models... to "tailor" motors to meet your needs.

Leland motors and power generators immediately available on priority include:

Repulsion-Induction

Capacitor and Split Phase

Variable Speed and Reversible

Totally enclosed motors

Power Generators

Sizes  $\frac{1}{8}$  to 3 HP single phase—5 HP polyphase

*Make Certain the Name and Address of Leland Electric Co. is on File for Future Reference.*

**THE LELAND ELECTRIC CO.**

DAYTON 1, OHIO



# NIGHT LIFE 1944



## Where N•B•M Bronze Castings Help "Swing" the Job to Completion

N-B-M Bronze Parts serve in our war industry—from Maine to California. You find them wherever speed and accuracy are needed: in humming shipyards, in railroads and factories, in steel mills, machine shops, power plants.

We will be glad to assist you on rush jobs, and help crystallize your post-war thinking into concrete plans.

## N•B•M BRONZE PARTS



# NATIONAL BEARING METALS CORPORATION

ST. LOUIS • NEW YORK



PLANTS IN: ST. LOUIS, MO. • PITTSBURGH, PA. • MEADVILLE, PA. • JERSEY CITY, N. J. • PORTSMOUTH, VA. • ST. PAUL, MINN. • CHICAGO, ILL.



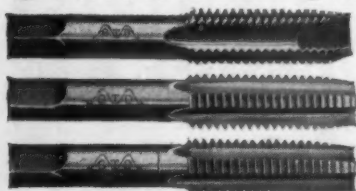
The Germans and the Japs do bring down some American planes — but they'd better be sure they fall in enemy territory. Otherwise, many of them have a way of coming up again, to do battle once more.

The damaged planes — called "hangar-queens" — are kept intact, till their undamaged parts are needed to repair another plane.

What makes possible this free interchange of parts is that miracle of modern manufacture which we're prone to take for granted — STANDARDIZATION.

The striking story of the hangar-queen, made possible by standardization, only highlights its benefits to the world in *time of peace*. For not until the use of interchangeable parts made mass production possible did all the people begin to share the comforts formerly available only to the few. *And the end is not yet.*

## Standard Threads - SAVE TIME - SAVE MONEY!



GUN TAP  
●  
CUT THREAD TAP  
●  
GROUND THREAD TAP

Here are 3 different types of Tap, all of the same size. One of these will best suit your requirements. You'll save money on your work if you first determine which of these types you should use, and thereafter specify this type for that job. This is "Standardization" in practice.



**GREENFIELD TAP AND DIE CORPORATION**

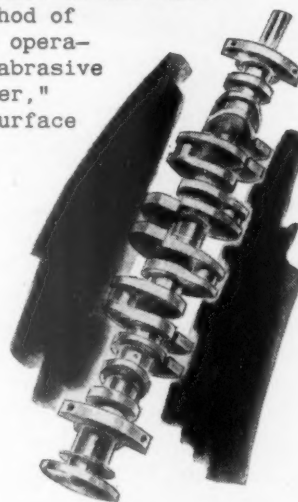
**GREENFIELD MASSACHUSETTS**

## The darndest machine you ever saw...

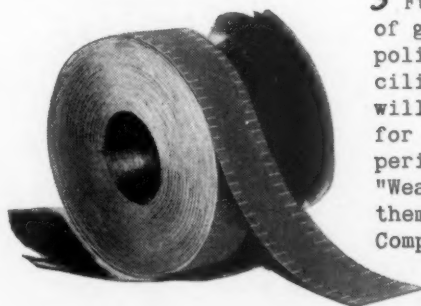


1 It has an interesting, complex oscillating motion. It works up and down following crank contours. And it does it all at once! It's the darndest machine you ever saw! Yet it is one of the most efficient and productive machines of its type. Its job is to finish all of the bearing surfaces on a crankshaft at one fell swoop! The older method of performing this same operation is to hold the abrasive cloth in a "nutcracker," finishing only one surface at a time.

2 With the new machine, strips of successively finer grits of abrasive cloth, having serrated edges to permit the strips to follow the fillets of the bearings, are automatically inched past the revolving crankshaft from a feed roll of the cloth. And on many a job it's Aloxite Brand cloth by Carborundum that gives the ultimate smooth, satin finish.



3 Further improvements in techniques of grinding, finishing, sharpening and polishing, developed through the facilities of The Carborundum Company, will be helping to produce still more for less, now as well as in postwar period. Remember abrasive products are "Weapons for Production." Use them wisely. The Carborundum Company, Niagara Falls, N. Y.



**CARBORUNDUM**  
TRADE MARK  
ABRASIVE PRODUCTS

Carborundum and Aloxite are registered trade-marks of and indicate manufacture by The Carborundum Company.



YOU CAN GET MORE  
**"STAINLESS"**  
*Delivered  
 Faster Now*

Stainless steel has been one of the "tightest" of all scarce metals. Now it is more readily available for W.P.B.-approved war and civilian uses, and delivery can be made faster.

Greater production of ARMCO Stainless Steels is made possible by more plentiful raw materials. Most of the alloying elements used in stainless—including chromium, nickel and molybdenum—are again fairly abundant.

For war uses it is not necessary to look for substitute materials. In fact, removal of restrictions is being considered for applications where it has been difficult to convert to other materials.

#### ***Resists Heat and Corrosion***

ARMCO Stainless has many advantages, in war as well as in peace. Its hard, smooth surface withstands wear and tear; its high strength/weight ratio helps you design with lighter sections. Stainless defies heat and staunchly resists many forms of corrosion. It forms easily and can be readily welded.

If you make war equipment you'll find an ARMCO Stainless grade for every requirement. Just write to The American Rolling Mill Company, 821 Curtis Street, Middletown, Ohio.



Pasteurizing tanks made of stainless



Oxygen tanks for sky-fighters

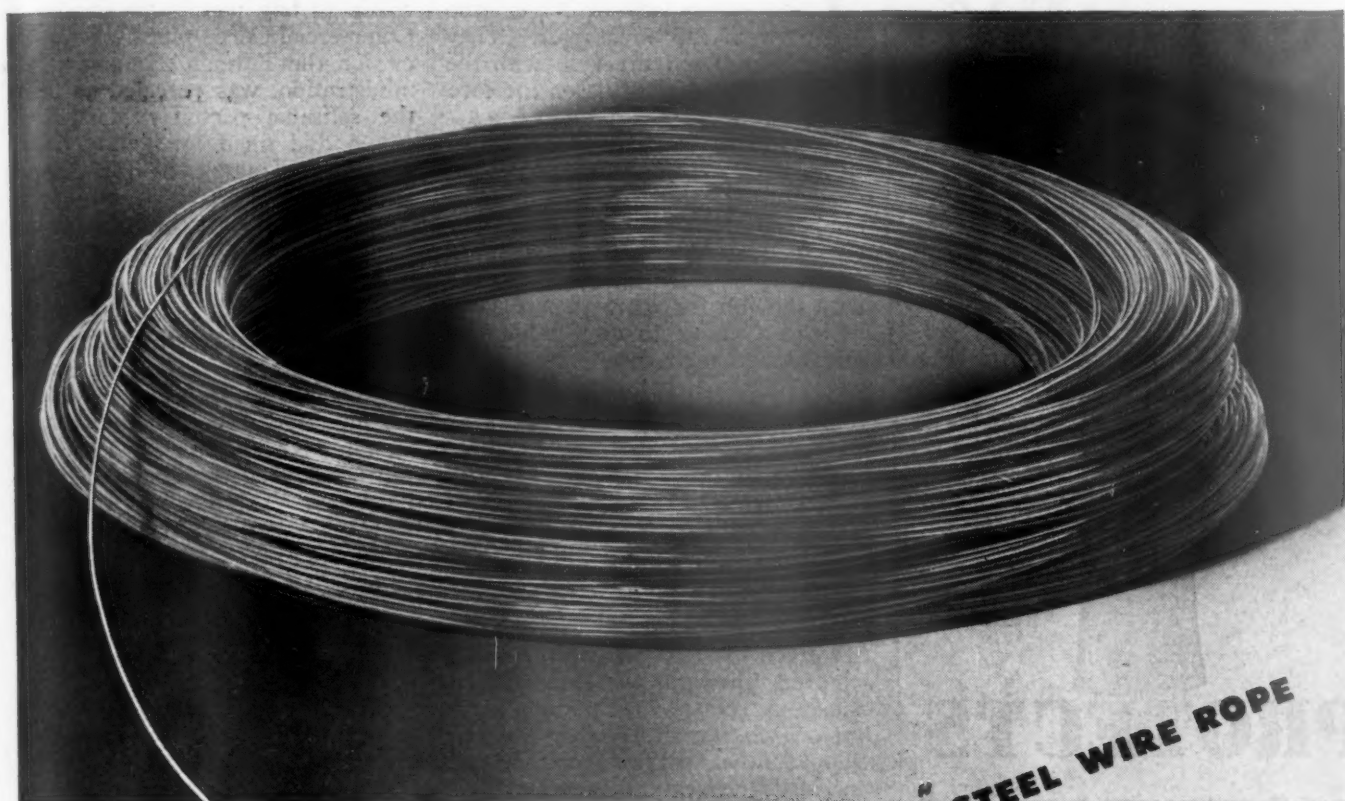


For a warplane's collector system



*The American  
 Rolling Mill Company*

*Wire rope can be no better than the individual wires that go into its construction . . . our open hearths, blooming mills, rod and wire mills are all dedicated to the production of specialized wire and wire alone*



**ROEBLING "Blue Center" STEEL WIRE ROPE**

WHAT CAN YOU EXPECT from Roebling? Rope that has known capacity to deliver service. Engineering, in our plant and at your job, to put the rope to work right. Maintenance practices that protect its long life. » Your postwar profits and postwar jobs will depend in part on operating rope-rigged equipment at lowest cost. You can leave that part to Roebling.

JOHN A. ROEBLING'S SONS COMPANY, Trenton 2, New Jersey  
Branches and Warehouses in Principal Cities



# ROEBLING

**PACEMAKER IN WIRE PRODUCTS**

WIRE ROPE AND STRAND • FITTINGS • AERIAL WIRE ROPE SYSTEMS • COLD ROLLED STRIP • HIGH AND LOW CARBON ACID AND BASIC OPEN HEARTH STEELS • ROUND AND SHAPED WIRE • ELECTRICAL WIRES AND CABLES • WIRE CLOTH AND NETTING AIRCORD, SWAGED TERMINALS AND ASSEMBLIES • SUSPENSION BRIDGES AND CABLES



## PROTECTS

C/R mallets and hammers permit forceful, effective blows without battering, scarring or marring. They protect fine finishes, delicate insulation, hardened parts and costly machinery. They far outlast other mallets, hold a true striking face and, because they absorb recoil, they are less fatiguing on continuous use operations (as pounding in winding, assembly work, etc.). Speed production—reduce spoilage. All sizes. Weighted or unweighted. Hammers take replaceable insert faces.

Write for Catalog Sheets

**CHICAGO Rawhide MFG. CO.**  
1294 ELSTON AVE. ★ CHICAGO, ILLINOIS

# F.O.B. *Philosophy of buying*

**Y**OU'VE heard, of course, about the young lady of Niger who went for a ride on a tiger. They came back from the ride with the lady inside, and a smile on the face of the tiger.

Something of the sort seems to have happened to the Baruch-Hancock-Byrnes committee that brought out the Uniform Termination Clause. Army, Navy, Maritime Commission, and WPB had wrestled with the job for more than a year without coming to any judgment, carrying on their own private civil war while the battle of bayonets, bombs, and production raged on global and home fronts, each agency doubling in the roles of the irresistible force and the immovable object, and getting nowhere, not particularly fast. The committee's job was to go in and tell each of the agencies what was what, and came up with one uniform clause for all. In seven weeks flat, they had achieved their answer and their clause—a remarkable achievement. But on sober analysis of the result, it appears that what really happened was that the several agencies had persuaded the committee to write a clause that in effect merely authorizes each of them to go right on doing what they pleased—in other words, negotiated settlements. There is a formula, to be sure, arriving at the rather indefinite goal of "a reasonable allowance" agreed to by the individual contracting officers, by a process so full of holes that, in the words of George Renard, you could drive a tank or an airplane carrier right through it. The smile is still on the face of the tiger.

**W**HEN a man is appointed to a position as Purchasing Agent, we consider it news. We were somewhat startled, however, when our contemporary, the newspaper *PM*, in its issue of January 14th gave a five-column headline to the fact that a certain man was *not* appointed Purchasing Agent. The circumstances surrounding this rather unusual news angle were that the

man in question, slated to go to Spain to buy metals for the U. S. Commercial Corp., purchasing agency for the Foreign Economic Administration, was revealed as being the selfsame person recently convicted and fined for acting as an unregistered agent of the Franco government. *PM* reports with satisfaction that the purchasing appointment did not go through.

**A**T the opposite extreme is the foresight and action of the City of Haverhill, Mass., in announcing the appointment of a new City Purchasing Agent before the job is open, to take office if and when P. A. Charles A. Kelleher is inducted into the Army. The new appointee will be Mrs. Asher B. Arnold, who is presumably not liable for induction. Editorializing the *Haverhill Gazette* declares that Mrs. Arnold "has the intelligence and business experience and integrity to maintain the prestige of this important office."

**F**ROM time to time, in these columns, we have discussed the pros and cons of the persistent argument as to whether purchasing is a profession, and whether purchasing men have or should have professional status. The question, once purely an academic issue, has assumed more practical importance with the classification of industrial personnel for the application of such national policies as Selective Service and the Fair Labor Standards Act, and official rulings are now gradually becoming available. The answer seems to be "No."

Last September we published the definition from the U. S. Labor Department's "Dictionary of Occupational Titles," which excluded purchasing from both the Professional and Semi-Professional classifications and gave it a rating under "Managerial and Official."

Within recent weeks, another pertinent decision has appeared—not directly referring to purchasing, to be sure, but embodying a definition



that can well apply. F. O. B. leads a double business life, and from the very nature of this job has a keen personal interest in both purchasing and publishing. In the latter capacity, his attention was attracted to this decision of the 6th U. S. Circuit Court of Appeals, upholding the decision of a District Court, which in turn had upheld an order of the Wage-Hour Division of the Department of Labor against the Sun Publishing Co., publishers of "The Jackson (Tenn.) Sun." In giving the opinion of the Court, Judge Charles C. Simons of Detroit said:

"We know of no state that requires of (reporters) an examination of competency or a license to practise, and there are editors of long experience and trained judgment who, agreeing that 'the proper study of mankind is man', likewise believe the only practical school of journalism is the newspaper office."

Paraphrasing that statement, it is equally true that "We know of no state that requires of (Purchasing Agents) an examination for competency or a license to practise, and there are (Purchasing Directors) of long experience and trained judgment who... believe the only practical school of purchasing is the purchasing department."

The Judge's conclusions from this reasoning are clear cut and positive: "... no special immunity from the application of Federal laws... not generally recognized as members of the learned professions."

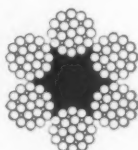
WITH all the publicity attending the constant "simplification" of governmental paper work, Uncle Sam is a bigger customer for this sort of equipment and supplies than all the business and industrial establishments of the country put together. That observation is based on a sales chart shown to us by the sales manager of one of the leading manufacturers of filing supplies the other day. Some five years ago, less than 15% of this country's output was sold to governmental agencies, and the rest went to private industry. As of February, 1944, the government was taking more than 57% of a greatly increased output. The figures are obviously incomplete. They don't take into consideration, for example, the product of the world's largest printing establishment in Washington, running on government work exclusively. The sales manager, incidentally, stopped in on his way to make another call on the Treasury Procurement Division.

## Dependable "PREformance"

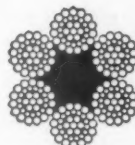


Dependable equipment is a means to efficient performance. This is one important "WHY" of America's magnificent production record.

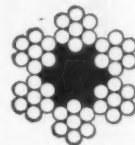
Our own high standards in every phase of wire rope manufacture over a period of many years, has made it possible for our product to shoulder a greater share of the extra burden imposed by war. Preformed "HERCULES" (Red-Strand) Wire Rope is especially qualified for the difficult jobs. The inherent qualities of this time-tested rope, *plus* the advantages of Preforming — make for easier, quicker and safer work... more production from each pound of steel... greater efficiency.



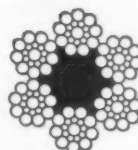
6 x 19  
Filler Wire



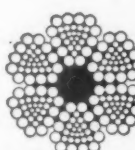
6 x 37  
Extra Flexible



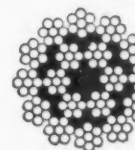
6 x 7  
Haulage Rope



6 x 19  
Seale



Style G  
Flattened Strand



18 x 7  
Non-Rotating

As wire rope is used for many purposes, it is made in a wide range of grades, construction and types, some of which are illustrated above. To obtain maximum results it is necessary to select the rope most suitable for the particular work it is to do. Our experienced Engineering Department is at the service of all wire rope users to help make the proper selection. Feel free to consult us.

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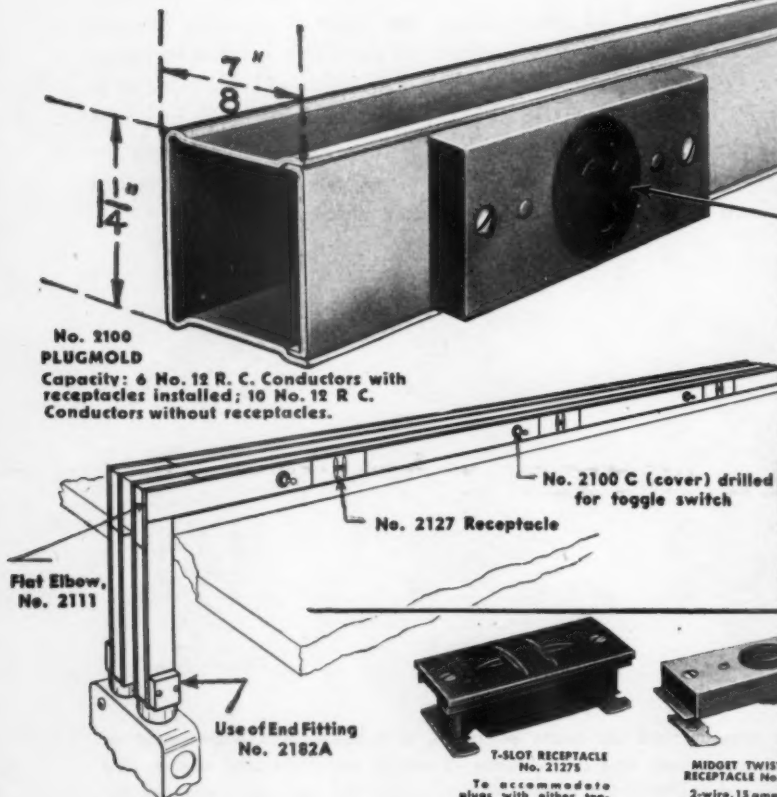
*Wiring assembly benches for small motors and hand tools*



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T-SLOT RECEPTACLE  
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MIDSIZE TWISTLOCK  
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3-wire receptacle for  
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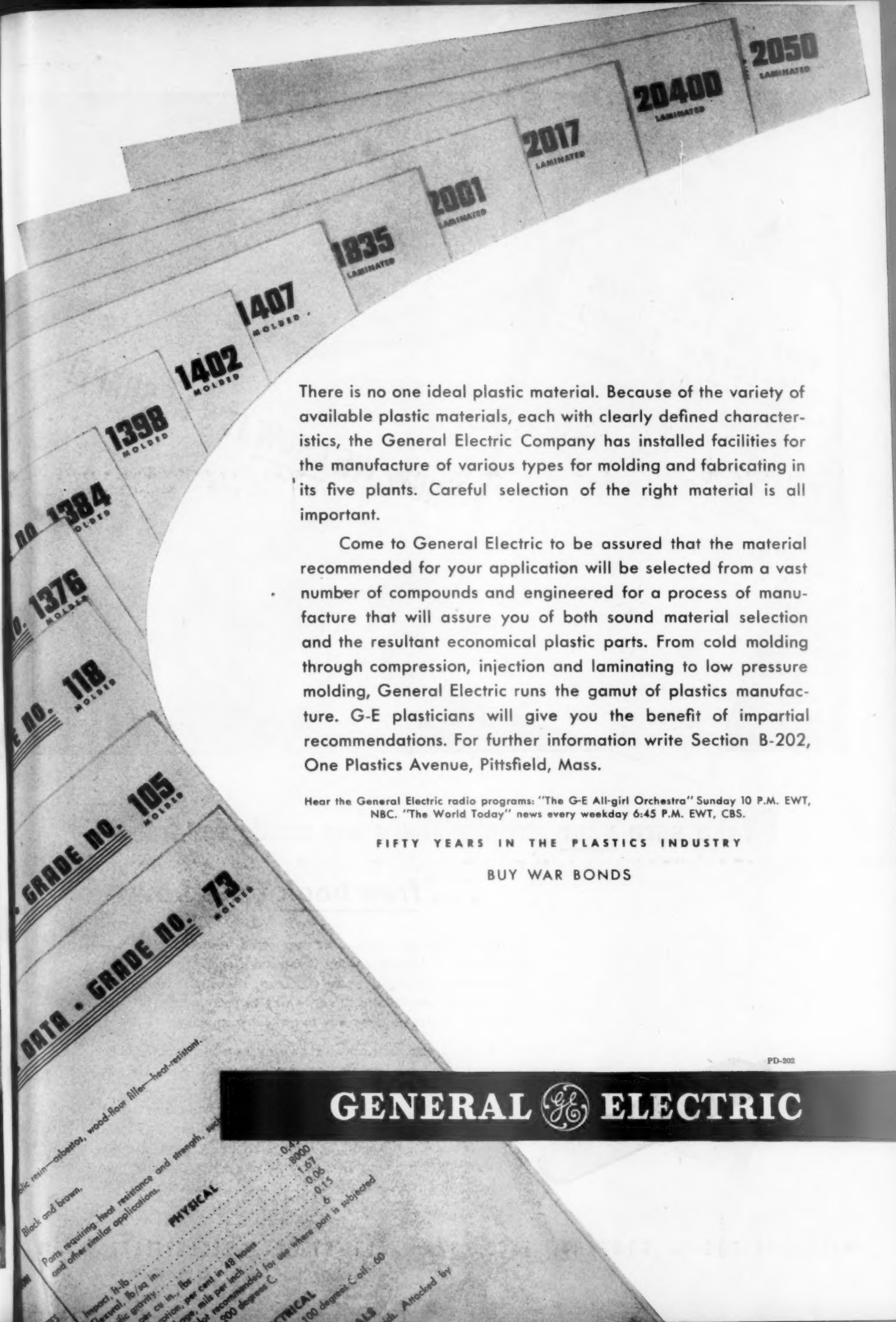
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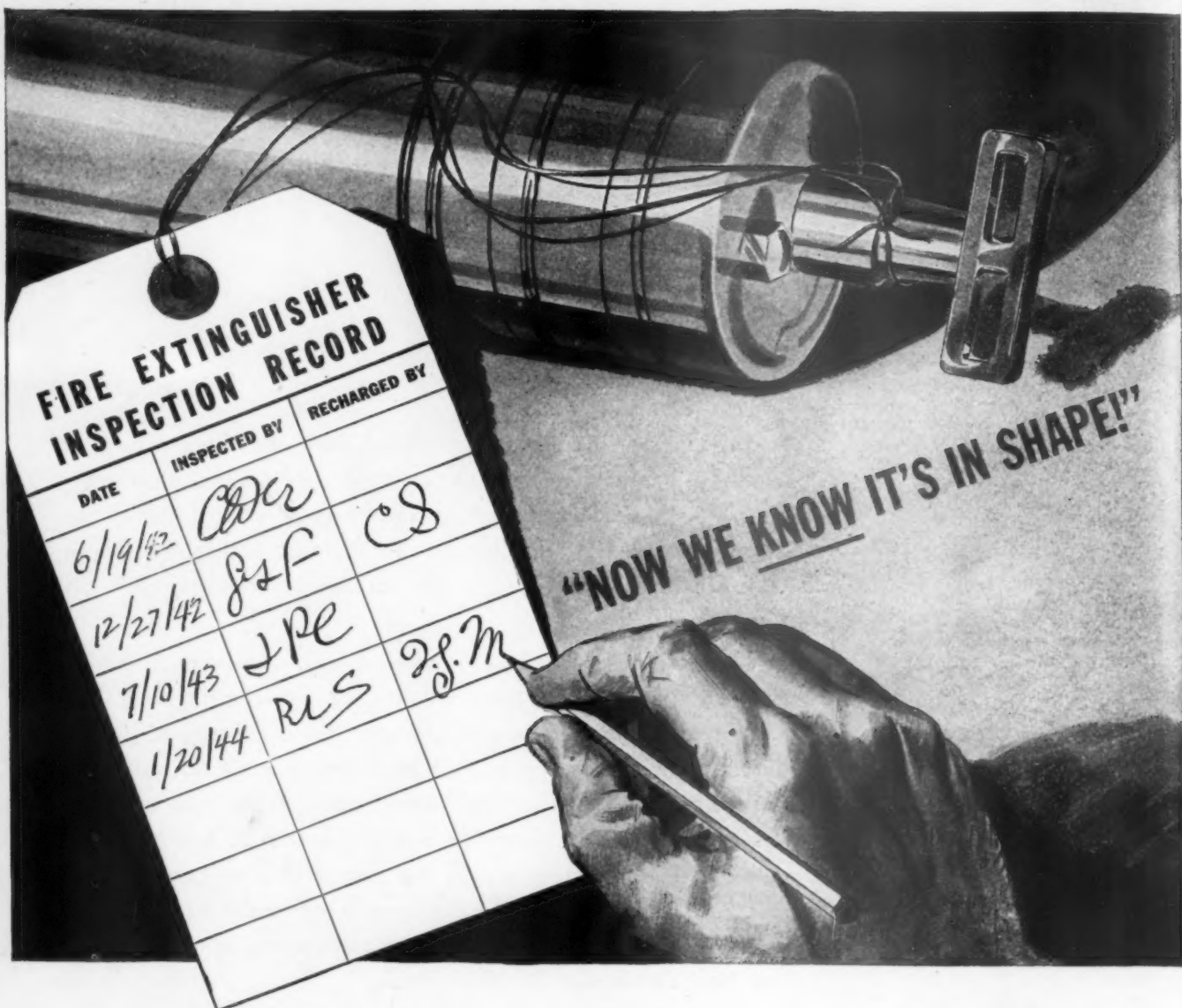
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Parts requiring heat resistance and strength, such as:  
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Elongation, per cent in 48 hours 0.06  
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Electrical 100 degrees C. 60  
Attacked by





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Your fire-fighting equipment may stand unused for years—we hope it does! But when it is needed against real fires, it must operate instantly at top efficiency. Thorough examination at regular intervals is the only way to make sure that your fire-fighters are *always* ready to protect your plant.

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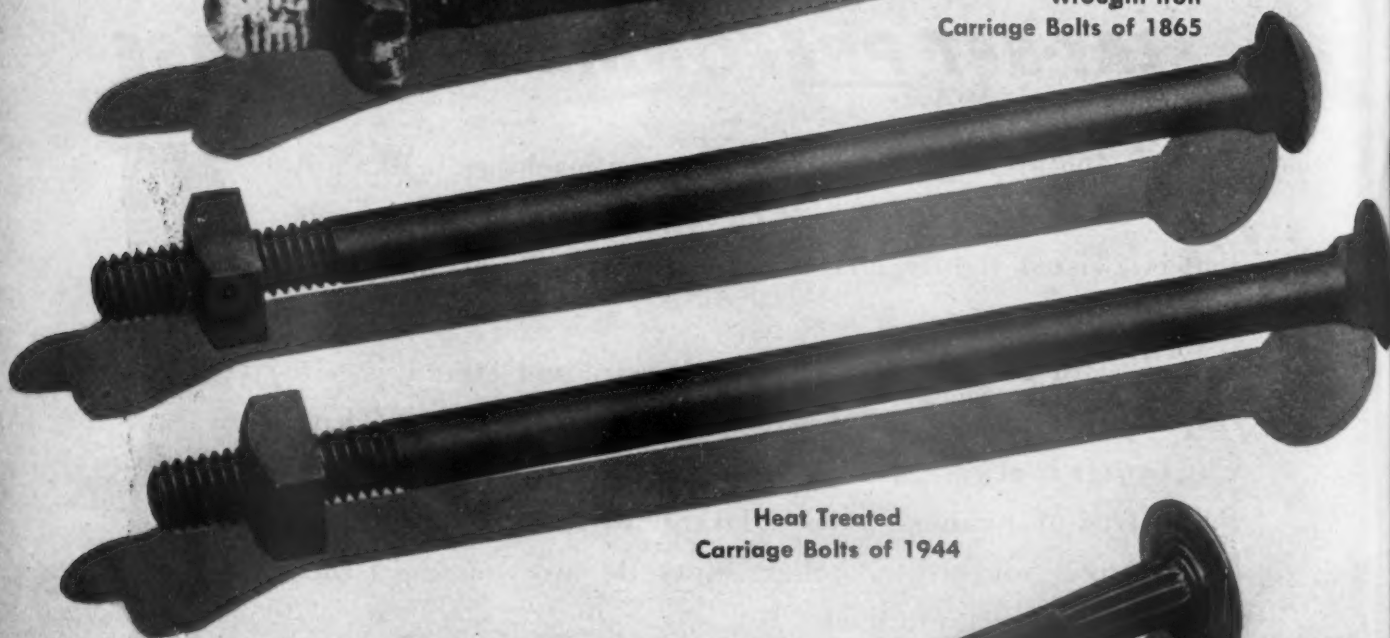


**HAZARD LAY-SET *Preformed* WIRE ROPE**

# *Successor to Carriage Bolts*



Wrought Iron  
Carriage Bolts of 1865



Heat Treated  
Carriage Bolts of 1944



Lamson WEATHER-TIGHT Bolts

# ...THIS NEW KIND OF BOLT FOR WOOD ASSEMBLIES . . . . . THE LAMSON WEATHER-TIGHT BOLT!

U. S. Patent No. 2056688

● Micah Rugg started a country blacksmith shop in Marion, Southington Township, Conn., in 1818 and made scythes, steel bear traps *and bolts*. By 1839 Mr. Rugg had personally sold nearly 3000 Carriage Bolts at an average price of 16c each. In 1840, he teamed up with Martin Barnes, and the company of Rugg & Barnes became the first bolt manufacturer in America. First type of bolts made were Carriage Bolts, made from square bar wrought iron stock brought over from England. Threaded portion was hand-swaged to roundness, *shank beneath the head left square!*

Since 1837, Henry A. Miller of Miller's Station, Conn., had been making wood and metal clock dials. In 1853 he considered this new enterprise of making bolts, and thereupon admitted two nephews to his business, Thomas Henry Lamson and Isaac Porter Lamson, and a third young man named Samuel Washburn Sessions. They produced fire shovels, fire tongs, cranes, and irons *and—bolts and nuts*. They operated with varied success until the panic of 1857. Surviving the war between the States, in 1867 a partnership of Lamson & Sessions was formed at Mt. Carmel, Conn., and in 1869 it was moved to Cleveland, Ohio, to be closer to the source of raw materials and markets.

At top, left, are two of Lamson & Sessions' first Carriage Bolts removed from wood piling on the sea-coast some years ago. You can see the square shank under the head. At center, left, are two modern heat-treated Lamson & Sessions' Carriage Bolts—with the same square shank beneath the head. And at the bottom, left, are what we think is the successor to Carriage Bolts for many applications—the Lamson *Weather-tight Bolt* for wood assemblies.

In place of the square shank beneath the head of the old style Carriage Bolt is a tapered, splined shank—presenting *six times* as much gripping surface to the wood as the Carriage Bolt shank.

The top of the *Weather-tight Bolt* has a convex shape, and on the under side of the head are two concentric, V-shaped rings which compress wood fibers when the bolt is pulled down tight. So strong is this head that stock bolts have been pulled, head and all, undamaged, through a 3-inch yellow pine block—a test you can make yourself.

No counterboring is necessary to make a smooth assembly with Lamson *Weather-tight Bolts*—for they draw down flush with the wood surface. Tapered splined shanks prevent their turning when the nut is

applied. They fit a bored hole like a cork in a bottle—moisture cannot enter from either end! Lamson *Weather-tight Bolts* are made from  $\frac{3}{16}$ " to  $\frac{3}{4}$ " in diameter, and in any length. If you have wood assemblies to make—send for further details and prices. Samples for your tests on request.

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☐ Bolts are Important! ☐ Simplified Stock Sizes

Name of Individual

Title or Kind of Work

Employed by (Name of Company)

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# PURCHASING PREVIEWS

From the Washington office of

## PURCHASING

National Press Building  
Washington, D. C.

March 1, 1944

### For Purchasing Executives:

PATTERN OF POST-WAR INDUSTRIAL DEMOBILIZATION AND RECONVERSION of industry is gradually being shaped up—with little divergence of opinion on the need for an orderly demobilization without dumping of surpluses.

Two major points of difference emerge in the thinking expressed by Government, and Congressional leaders. One relates to policy, the other to administration of the reconversion program.

In the matter of policy, some Government sources assume that orderly reconversion will require close Government supervision and control. Congressional leaders tend to rally to "free competitive enterprise", nevertheless recognizing that even free enterprise cannot be achieved without Government controls designed to achieve such freedom.

The question of how reconversion of industry is to be administered raises some interesting speculation, which is likely to be tentatively settled through a series of expedients, but which can only be fully resolved when the war picture becomes clearer.

Report of the Senate Special Committee on Post-War Economic Policy and Planning—made public by its chairman, Senator Walter F. George—points out that estimates of the amount of goods that would be owned by the Government upon the termination of its contracts run as high as \$75,000,000,000. There have been more conservative estimates, but it is apparent that the dollar value of surplus goods and materials will be fantastically high.

It also appears that a large quantity of these goods and materials will be of a special purpose nature—difficult, if not impossible, to adapt to civilian consumption or post-war industrial operations.

Senator George's committee suggests the creation of an agency to handle the problem of reconversion and surpluses—to be accountable to Congress, and to be known as "The Office of Demobilization".

Crux of the committee's attitude toward administration of demobilization is the following excerpt from the post-war report:

"The committee believes that the Congress should lay down the broad policies under which these problems are to be handled, should create the agency for coordinating them and define its duties and should immediately pass any legislation necessary to clear away obstacles to their speedy settlement and should repeal or amend any legislation that presents such an obstacle.

"The committee recognizes that hostilities may cease in two stages; that the problems of reconversion may come in three steps, or may go through continuing changes as the tempo of war changes. These changes, however, are changes in degree only and are ones with which the recommended central agency will have to deal. It is not believed that these differences in degree affect the part which Congress should play in clearing the way for the solution of the great, broad problem."

Following specific recommendations are made by the committee:

1. Every action taken should be aimed at keeping the nation at full employment levels.
2. All plants not needed for national defense and suitable for peace-time production should be sold—provided this would not result in over-production. If the latter is the case, the plants in question should be held off the market.
3. Where Government ownership affects a controlling segment of an industry (such as airplane production, aluminum, magnesium, rubber, pipe lines and steel mills), specific legislation by Congress should determine disposal.
4. Surplus goods should be disposed of in a manner to best utilize their economic value, and as expeditiously as possible. At the same time, they should not be forced on the market in quantities greater than



the civilian market can absorb, without unduly disturbing the economy, or in quantities that will cause the shutting down of factories producing them. Their sale should be so timed as to take into consideration its impact on the economy. Any surpluses that cannot be absorbed in this country within a reasonable time without disrupting the economy should be sold abroad, where this can be done without also unduly disrupting the domestic economy.

Where practicable, surplus goods should be sold in quantities that will permit their acquisition by small purchasers. Methods of sale that will permit these goods to fall into the hands of speculators should not be used, but wherever possible they should be distributed through regular distributive channels.

5. No Government-owned plants should be scrapped and no surplus property should be destroyed except in circumstances where their continued existence would have such a profoundly harmful effect upon the national economy that their destruction appears imperatively necessary.

6. The shutting down of factories, the stoppages of work, and the unemployment of workers, through delays in contract settlement, will cause far greater loss of revenue to the government—to say nothing of the general economy—than could possibly be saved through conventional pre-audit of contractors' claims.

7. Prime contractors and subcontractors and the various layers of contractors below subcontractors have all contributed in equal degree, according to their ability, to the war effort, and the Government owes the same obligation to all of them, whether or not their claims legally are against the Government, and its contract termination procedures must be designed to afford them equal protection, certainty, speed, and fairness. Every possible effort should be made to overcome any legal obstacles that may stand in the way of this purpose.

8. Unless previous arrangements have been made for their retention by the contractor, Government-owned machinery, tools, equipment, and inventories should immediately be removed from privately owned plants. The fact that no adequate storage facilities exist for them should not be a deterrent to the accomplishment of this purpose. Privately owned plants moved their machinery into the weather to accommodate Government machinery, and if necessary to prevent the shut-down of private plants, the Government should do the same with its property.

9. The Army, Navy, and Maritime Commission should determine what property in their hands constitutes surplus. The determination of what constitutes surplus in the hands of other agencies should rest with the Office of Demobilization, or its designee.

The recommendations of Senator George's committee are representative of the thinking of a large bloc of legislative and military leaders—and together with the proposals of Bernard M. Baruch will provide the broad framework for establishment of both policy and administration.

\* \* \*

INDUSTRY ADVISORY COMMITTEES WILL PLAY A DOMINANT ROLE in reconversion plans. Industry committees have become a common counterpart of war agency administration, with the industry groups functioning as semi-official advisors.

Members of the committee are protected against prosecution under the anti-trust laws by an agreement with the Department of Justice, that representatives of industry meet and discuss their problems and make recommendations to Government.

Such meetings must be under the chairmanship of a Government presiding officer—and the decisions reached are merely in the form of recommendations.

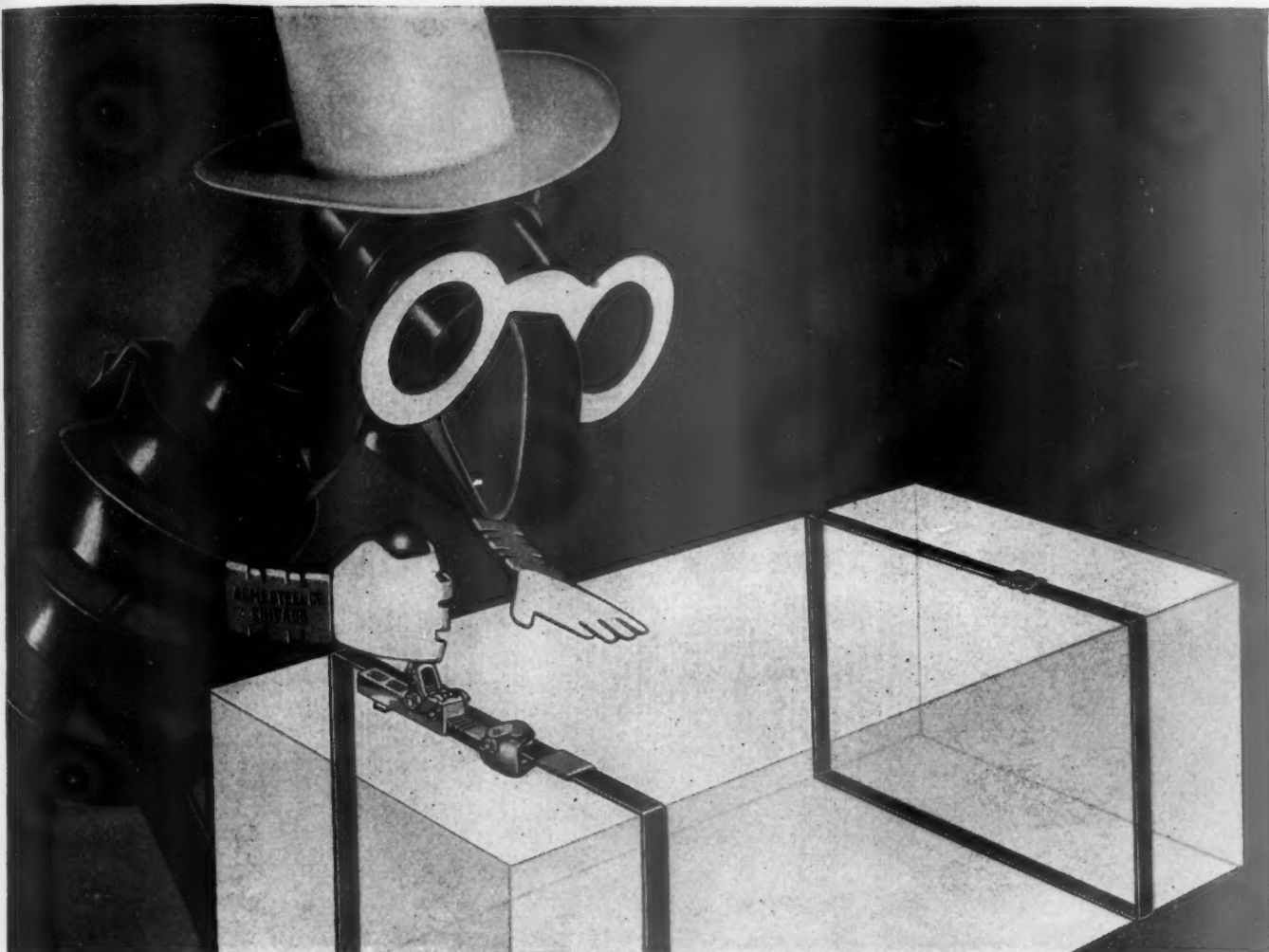
However, while there was little question of the propriety of industry committees during a total war economy, a further clarification was necessary to bring industry committees into the reconversion picture.

To guard against any arbitrary action by WPB industry divisions, WPB Chairman Donald Nelson has issued an executive order providing that no limitation or conservation orders may be issued, and no such existing orders amended without prior consultation with the industry committees.

Further, any member of a committee may write a memorandum of objection to a proposed order or amendment to the WPB Vice Chairman who administers the particular division issuing the contested action.

This, in effect, gives committee members the right of appeal, and such appeal might result in additional meetings of the industry committee to permit further consideration before final action is taken.



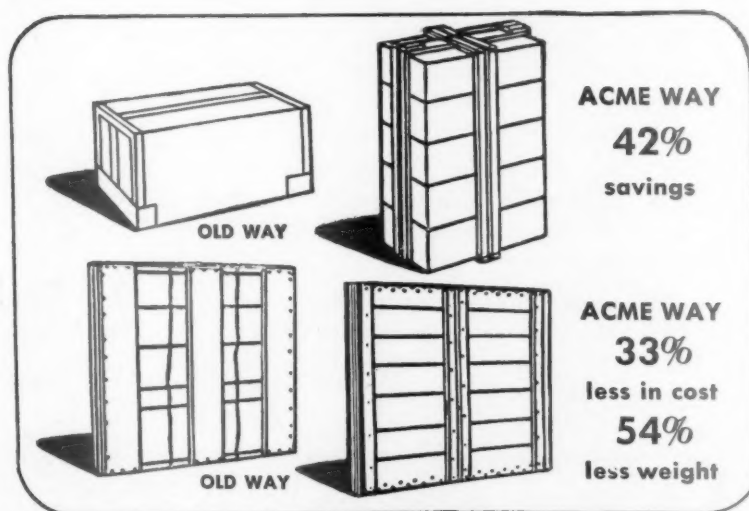


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# PURCHASING

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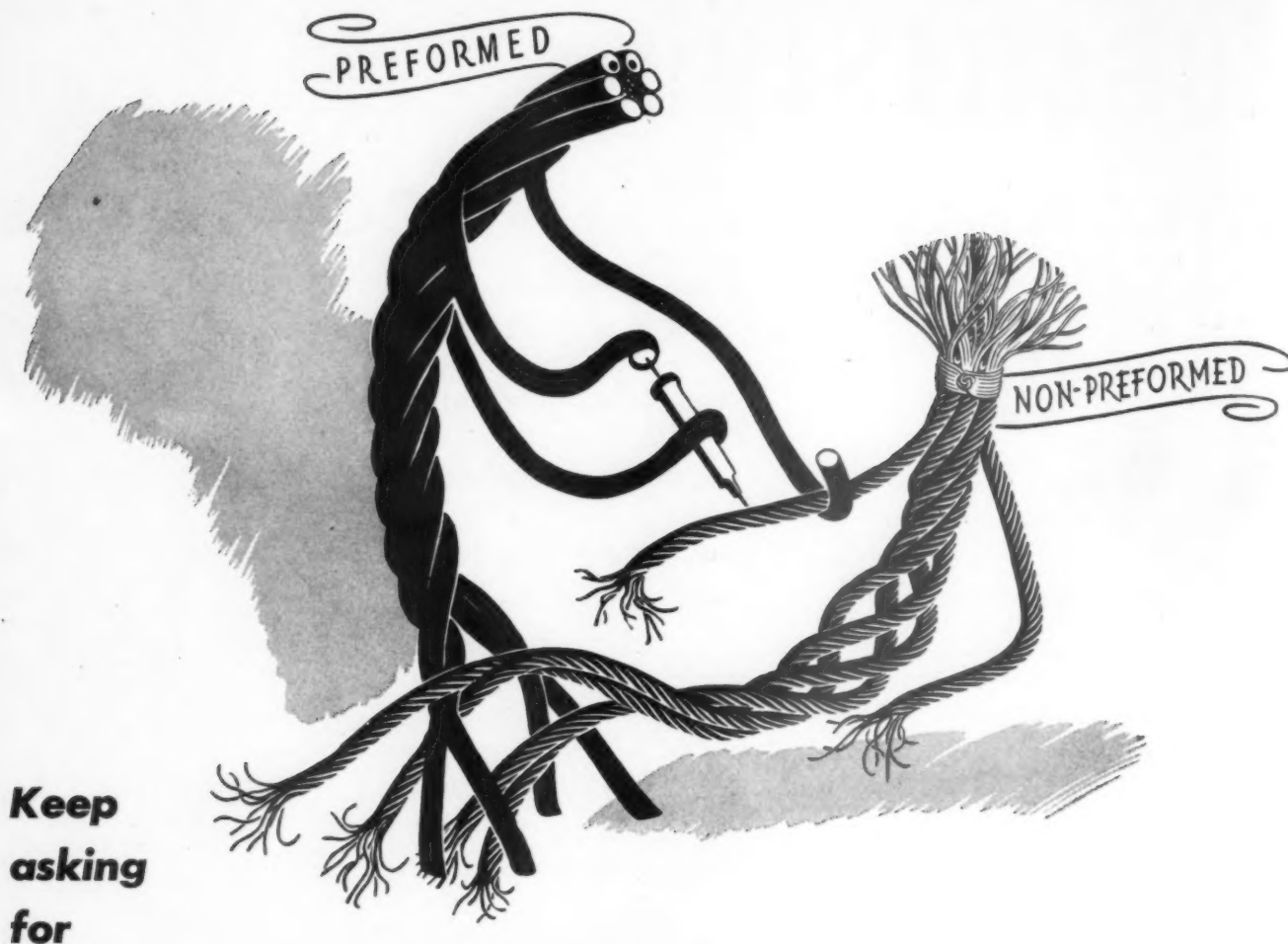


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## BUYERS MAKE MARKETS—

**T**HE leading article in the February issue of *Industrial Marketing*, by Percival White of the Market Research Company of America, deals with the development of post-war industrial products. It is the synopsis of a book, now in preparation, on this important subject. The thesis of the book, he states, is "that the sales point of view is the key to success in modern industrial product development." In the course of developing this thesis, he takes occasion to remark:

"Anyone who has interviewed purchasing agents, especially, is prepared for them to be barren of constructive ideas."

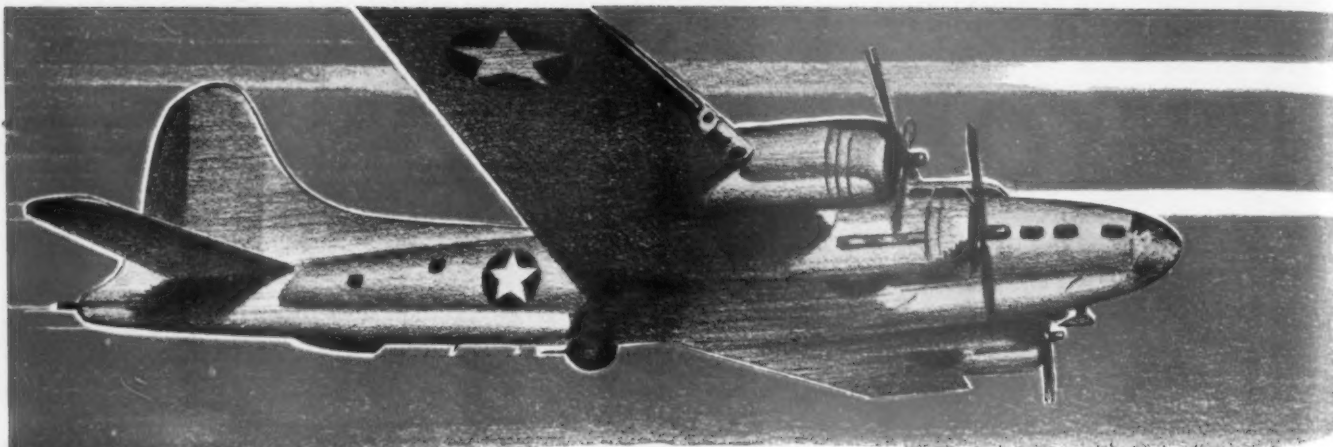
It is obvious that anyone who makes such a careless and unfounded statement hasn't taken the trouble to interview any representative purchasing agents, or has found their ideas differing from his own (therefore non-constructive).

This issue of *PURCHASING* presents an authentic cross section of current thought among purchasing men. One article reports a manufacturers' conference at which three representative purchasing agents, by invitation, gave some highly constructive suggestions on what industry should do—and must do—to hold business in the post war period. Another reports a regional market and manufacturing survey made by a group of purchasing men, at the suggestion of the Committee on Economic Development. This, too, is a highly practical and constructive market study, of special significance because it tells why these 70 buyers buy what they buy where they buy, and what they would buy if sellers would take the trouble to make it available to them. A third cites the considered judgment of a successful and progressive industrialist, E. M. Queeny, as expressed in his book, "The Spirit of Enterprise", to the effect that all industry must work for the buyer.

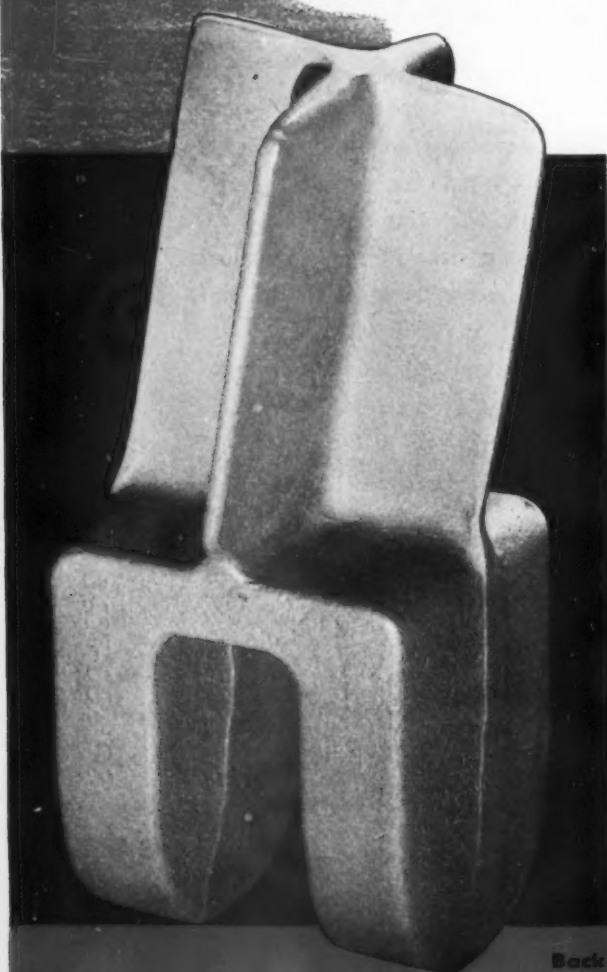
Curiously enough, Mr. White's own formula for market research methods also refutes his dictum on purchasing. For basically he proposes to sample the judgment and reactions of potential buyers and to form product decisions on that purchasing judgment.

Why, then, the gratuitous and illogical slap at purchasing agents? Because, as Mr. White so clearly sees, we are rapidly approaching the competitive condition in which purchasing decisions determine sales, and in which every transaction means one happy salesman and nine disappointed ones. So, for the benefit of the nine, he hastens to trot out the old and thoroughly unconstructive alibi and scapegoat for their failure, well in advance of the actual condition. It would be more constructive, and closer to the fact, to define the successful sales viewpoint as making and marketing what buyers want, what they can use, and what they will buy.

*Stuart F. Skimming*



## THAT THEY MAY FLY SAFELY



**W**here failure means lives lost, there can be no compromise with **QUALITY**.

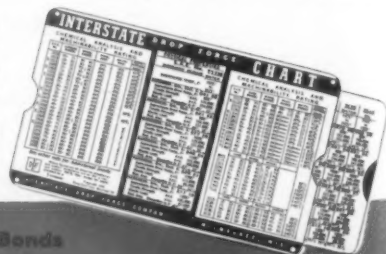
That's why every Flying Fortress that has ever been built uses hundreds of Interstate drop forgings at critical points. And these parts are furnished exclusively by Interstate.

Almost from the beginning of quantity airplane production, this organization has specialized in meeting the exacting requirements of the aviation industry. And, Interstate technicians and facilities are serving hundreds of other manufacturers in more than 30 essential industries.

Right now Uncle Sam's war needs come first. However, to the limit of our capacity, we will continue to take care of our customers' present and postwar requirements.

### INTERSTATE SLIDE-RULE CHART FOR STEEL

Gives recommended heat treatment, physical properties and machinability ratings at a glance... A request on your business letterhead will bring you one with our compliments.



Back the Attack—Buy MORE War Bonds

# INTERSTATE DROP FORGE CO.

DROP OR UPSET FORGINGS  
CARBON OR ALLOY STEELS  
HEAT TREATING  
METALLURGICAL CONTROL  
MAGNETIC INSPECTION EQUIPMENT



4081 N. 27TH STREET  
MILWAUKEE, WIS.



# HIGHLIGHTS

A brief summary of outstanding features of timely interest and importance in this issue, to conserve the time of busy readers



Contract Terminations is one of the hot subjects of the day, and one of ever increasing importance to Purchasing men. **Get Going on Terminations** on page 85 is short and to the point. Officials of the Readjustment Division emphasize that war contractors should now begin to work with contracting officers to prepare the basis upon which contracts can be terminated. This timely article contains specific suggestions on how to succeed.

Where does a **State Purchasing Department** fit into the executive and administrative organization of government? The third article in the series on "Spending and Saving the People's Money" by the Director of Purchases for New York State, on page 103, gives the practical answer and the reasons leading to her conclusion; also an analysis of the staff functions that should be incorporated in such a department.

A meeting of outstanding interest and practical value was the **Midwinter Conference of Public Utility Buyers** in Chicago, at which new government policies and rulings affecting this group were presented. **PURCHASING** was there, and brings you a synopsis of the proceedings in the report on page 90.

The benefits of **Standardizing Electric Apparatus**, including quicker delivery and installation, greater flexibility, easier maintenance problems, and lower costs, can not be effected by the manufacturers alone. They depend also on acceptance and use by all buyers. On page 93, H. V. Erben cites some of the accomplishments to date and takes a long range look at the program ahead, with some practical suggestions on buying policies that will accelerate the program.

M-293 is the most important of the M orders. It is the key to effective scheduling and recent simplification will save vast amounts of paper work. You will find much of prime interest in **Simplified Scheduling Procedure Cuts Paper Work**, on page 115. This is a condensation of a conference of WPB scheduling officials. It explains how the new order will work, changes of policy, and the new protection accorded by "frozen" schedules.

**Materials Control** is more than a matter of accounting and records. Basically it concerns the physical care and handling of the materials themselves. The Globe Steel Tubes Company of Milwaukee is an outstanding example of good stockroom equipment and organization. The picture story on page 86 illustrates some of the methods that have been found successful in that company.



How one large manufacturer is **Merchandising Purchase Requirements** with great success in developing sources of supply and economical subcontracting, is described in the article on page 81. Incidentally, it is solving the question of whether it is better to manufacture or to buy a great variety of parts. Here is a practical idea worthy of study by every purchasing officer.

Three outstanding purchasing executives were invited by a manufacturers' association to explain the **Purchasing Viewpoint** on selling methods, cooperation between buyer and seller, and post-war buying policies. In a sense, they spoke for all purchasing men. Turn to page 102 for an abstract of their opinion.

Scheduling of purchases does not start with the purchase order but from the time of required delivery, and purchasing must be timed with that delivery as a goal. The **Time Cycle Charts** for magnesium alloy products on page 112, developed by the Air Corps at Wright Field to aid their suppliers, will be of interest and value to every purchasing department dealing with these modern materials.

Inflation—James F. Brownlee, Deputy Administrator for Price, OPA, states in his article **Inflation Can Still Happen Here** on page 96 that there is a grave crisis in the war against inflation, and that if we do not overcome the problems created by the war, they will overcome us and an orderly transition to normal peacetime economy will be impossible. He says pricing standards suitable for the reconversion period cannot now be determined, and that the war program will not permit much reconversion until the latter part of this year at least.



**Contract Law** depends not only upon the statutes, but upon their interpretation. In another of his timely articles, based entirely on court decisions within the past few months, Leo T. Parker brings contract law up to date for purchasing executives. Turn to page 99.

Industrial Demobilization and Reconversion is the subject of the **Washington Letter** on page 69. It deals with a number of pertinent matters including surplus goods, government plant ownership, government owned equipment, and role of the Industry Advisory Committees. It is important to keep-up-to-date with the new thought in materials, equipment, finishes and methods. The **Know-How Information** on pages 10, 12, 14 and 16 and the **New Products and Ideas**, page 124, are of prime importance to you.



## **Positive Identification of Ryerson Alloys**

**Confirms Quality . . . . . Prevents Shop Errors**

Each bar of alloy steel in Ryerson stock is painted on the end to indicate the type of alloy . . . and then stamped on the side near the end with the number of the heat from which the bar was rolled. Smaller size bars are bundled and tagged with similar identification.

This is important to you, because it offers an unmistakable means of verifying the alloy steel you receive from Ryerson. Also, both heat number and color marking are recorded on the Ryerson Alloy Steel Report that is furnished with each alloy shipment. The Report Sheet contains accurate data on the analysis, working temperatures and the heat treatment response for quenched and drawn 1, 2, 3 and 4 inch rounds of the steel you

receive. This gives you reliable information for heat treatment that will produce the desired result.

This unique and valuable Ryerson alloy service is one of many reasons why it will pay you to concentrate your steel purchases with us.

Joseph T. Ryerson & Son, Inc., Plants at: Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.

# **RYERSON**



"Sound purchasing will be recognized when priority ratings have been forgotten"

## RENEGOTIATE YOUR THINKING

By **GEORGE A. RENARD**

Executive Secretary  
National Association of Purchasing Agents

**U**NCLE Sam has developed the all-time "Big" in purchasing organizations, for, aside from the limited output of Army operated arsenals and Navy owned yards, all the munitions and equipment needed for war must be purchased.

Try to grasp the variety of problems mixed up in an expansion of purchases from 75 million dollars for the entire year of 1940, to 3 billion dollars a month in 1943; that's the record on aircraft alone. It was a miracle in securing performance and results. Working often with unknown costs and compelled sometimes to handle transactions with inexperienced personnel, it would be a marvel if our statesmen failed to find smelly spots here and there on that record; have a heart.

The War Department has a Director, Purchases Division, Army Service Forces; he, Brigadier General Albert J. Browning, has personally signed contracts for \$61 billion in two years, the largest one only this month for \$750 million. But, get this straight, that organization does not boast about those spendings. They are proud, and justly so, of the \$12 billion in price reductions secured within a year. During the past two years there has been a continual decrease in the prices the War Department has paid for its supplies and equipment.

Perhaps they got started on a high level, says you; and certainly renegotiation is a second-guess, big stick only Uncle Sam can use. The pay-off is made on results and during

the last war the prices they paid increased throughout a similar period, instead of decreasing as they have done this time. In other words, this group of Army purchasing agents did not blindly accept the precedent, and psychology, that all costs and prices must continually rise in wartime.

That experience is thought-provoking, isn't it? And have you ever tried to guess what could have happened if "that bureaucrat," Leon Henderson, had not been the crack-down type?

### Fundamentals and Values

The experienced P.A. and the deep, theoretical thinkers agree there is a buying formula that will save pennies and lose dollars. They also



agree there are four important elements to consider in making a satisfactory purchase: (1) the suitability of the material for the requirement, (2) the availability of the material, (3) the credibility and dependability of the supplier, and (4) the price.

That's elementary stuff, of course, to experienced purchasing agents; they are experts who must measure values, with price and quality the most commonly used and easiest to read yardsticks, but with delivery or dependability of source of supply sometimes the trumps which clear the board.

Delivery has been the most important measure of value for so long that many who have entered purchasing in the past few years have every reason to believe that priorities or allocations determine values. It's a long lane that has no turn and we seem to be nearing the end of that one.

The war boom sellers' markets in many materials are passing. Demands of producers for stockpiles of their products and pressure to freeze surplus or excess materials out of our markets are indicators. A blind man can see that adjustments to meet changing conditions are being made now by aggressive management for, although the date of the unconditional surrender is anybody's guess, Mr. Hitler is living on borrowed time.

The backtrack to sound purchasing values will return with that change. The fellows who became purchasing experts, with an AAA priority as the principal qualification, will come out of the clouds. Results will not be measured by deliveries alone when supplies are ample. Anyone can give away dollars, but it is the purchasing man's job to sell his company's dollars for full value in the materials received in return.

As supply conditions change, and they already have in some instances, the whole atmosphere surrounding purchase and sales transactions will do an about-face. Buying and selling will come down to earth; we will get back to the fundamentals of purchasing values, all four of them—those who can. Sound purchasing will be recognized when priority ratings have been forgotten.

### **The Deflation Gap**

The economists have quarreled over the size of the inflation gap and what it would do to prices. So far that has been pretty much of a dud so far as industrial materials are concerned for "General Max" and his offspring have permitted few end-runs.

The inflation gap, in layman's language, seems to be the difference between income (called purchasing power) and the goods available to spend it on. It's a high-hat explanation of our old law of supply and demand; with supply scarce and demand strong, the price goes up.

That law works both ways, however, and perhaps there is some reason to expect that a deflation gap may develop before we have that postwar boom.

Aircraft plants, shipyards and other war plants are going on a six-day week; so are copper mines and many other all-out, overtime-at-double-time-regardless-of-cost production operations. Those steps will reduce purchasing power materially, for dropping the seventh day eliminates the eighth-day premium—an almost 25% shrinkage in the pay envelope. There should also be a normal expectancy for increased civilian production—the goods to spend it on—to soak up that hot-pocket purchasing power.

Perhaps we can't call it a new deflation gap but certainly it will take

some of the bursting pressure off the inflation gap.

There are few shortages of necessary materials for essential uses these days. The "get it at any price," pressure is not what it used to be. Some companies may even be selling at their renegotiated prices instead of the maximum ceilings permitted. It will be necessary to catch, and act on, that change of pace.

### **Peacetime Competition**

One of the best businessmen's economists and forecasters, is General Leonard P. Ayres, of Cleveland Trust Company. He served his tour of duty as one of the top statistical experts of the Army and has returned to business with that added experience. His opinions just now are thought-provokers for businessmen. This one, in particular, seems to have bells on it for purchasing men.

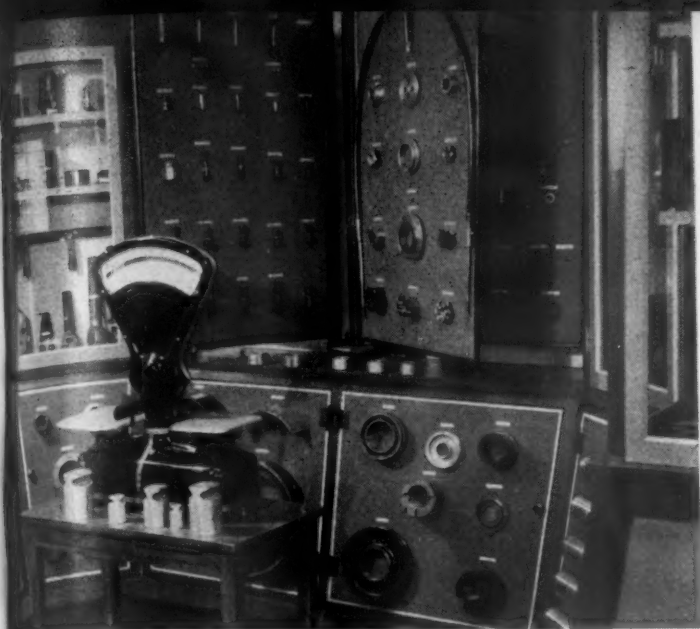
"In normal times goods and services are sold in keenly competitive markets in which discriminating buyers seek to obtain the best values at the lowest prices. During wartime booms all that is changed because government purchasing puts so much money into circulation that individual buyers have to stop being discriminating. They buy what they want, and pay what they must. Almost all businessmen still believe that they are engaged in competitive activities, but in reality in nearly all cases the nature of their competition has been greatly changed.

"There are records in Washington showing the numbers of man-hours required in different plants to produce the same sorts of ships and weapons, planes, and engines. The differences in efficiency are almost incredible. Many plants produce several times as much per worker as do others making the same

*Continued on page 294*

## **RENEGOTIATE YOUR THINKING!**

- . . . .to the change from sellers' to buyers' markets.
- . . . .to value instead of delivery as the buying motive.
- . . . .to consider deflationary factors in industry.
- . . . .to the changing nature of competition.
- . . . .to the permanent values of scheduled buying.
- . . . .to a realistic appraisal of new materials.



All sales representatives and other visitors who call on the LeTourneau Purchasing Department pass through this Display Room where they may "window shop" for items on which to bid. Swinging panels hold smaller parts exhibited in LeTourneau's display of production items which they would consider farming out to others; larger and heavier pieces are housed on shelves behind glass doors.

## A SHOW-CASE for PURCHASED PARTS

Here's a purchasing department that merchandises its requirements and is saving thousands of dollars annually through the purchasing display room  
A new and practical answer to an old problem—  
Manufacture or Buy?

By E. F. SCHUMACHER Assistant Purchasing Agent, R. G. LeTourneau, Inc. Peoria, Illinois

IT isn't news when a Sales Department sets up a display to merchandise the products which its company has for sale; but a show-room in a Purchasing Department, where vendors may "window shop" for items on which to bid, is a striking example of the manner in which war-time conditions have created new buying practices.

Buyers in this war-time market have learned that they must be salesmen as well as Purchasing Agents. They have learned quickly, too, and have wasted no time in applying selling practices to purchasing.

At R. G. LeTourneau, Inc., Peoria, Illinois, the world's largest manufacturers of earthmoving equipment, the Purchasing Department has devised and placed in operation what is believed to be a unique system which revolves around a newly designed display room, where are exhibited hundreds of production parts being manufactured by them which they would consider farming-out to others.

The display room at LeTourneau's is not, however, the result

of war-time conditions alone, but is the answer to several problems arising from Le Tourneau's rapid growth from a small welding shop whose volume of sales in 1930 was \$110,808.60, to an important manufacturing organization with plants in Peoria, Illinois; Toccoa, Georgia; Vicksburg, Mississippi; Stockton, California; and Rydalmere, Australia; whose sales in 1942 totalled \$30,060,107.75, and in 1943 reached a new high of about \$36,000,000.00.

### Need for Display Room

The need for a display room to exhibit production parts as a source of ideas from both salesmen and plant men, arose, first of all, when it became obvious that the company's growth required mass production methods of manufacturing parts which were formerly made by LeTourneau themselves on an engine-lathe basis. The plan exactly suited LeTourneau's growing cost-consciousness, in that it not only contemplated purchase of some items

formerly manufactured by LeTourneau, but also enabled the LeTourneau Methods Department to make a thorough study and analysis of parts and processes with view of instituting improvements and bettering methods of manufacture.

### LeTourneau Wants to Farm-Out

The second important factor in the development of the display room was the desire on the part of R. G. LeTourneau, Inc., to cooperate with the War Production Board in farming-out whatever it could to other manufacturers, in order to put the latter's idle machinery and manpower to work on the war effort, rather than buy new machine tools for making such items. It was this phase which actually gave impetus to the execution of the plan.

The LeTourneau products and operations are such that it has not been expedient or possible to farm-out or sub-contract very much, if any, work other than some sub-assemblies like diesel engines, transmissions, radiators, brakes, clutches, and the like, which are being



manufactured to specifications by companies who specialize in these respective types of work.

### Special Equipment Developed

Many of the LeTourneau facilities, including furnaces, cranes, hoists, presses, rolls, lathes with swings as large as ten feet are of special design and of their own manufacture. The company also has electric melting furnaces of their own design and manufacture, a steel foundry, various types of both gas and electric annealing and heat treating equipment, torch, friction, and other cutting equipment capable of handling twenty-four inch stock. They also manufacture their own requirements of welding electrodes, wire rope, oxygen and acetylene, and are what might be termed a self-contained organization.

Steel used by the LeTourneau company is mostly of special analysis, for which they have developed their own analysis and type of welding electrodes. Welding jigs and positioners of special design are required for their operations. Certain intermediate operations such as normalizing, machining, welding, cleaning, grinding, painting, processing, and packaging for shipment, must be done with special equipment which is not found in the average shop.

However, in spite of the above unusual conditions, R. G. LeTourneau, Inc., did want to make every effort to place business elsewhere, and as a result of the display room idea, has actually succeeded in farming-out considerable production. Although the company continues to be an outstanding example of industrial self-sufficiency, they are already buying more production parts than they make—from bolts and nuts, to engines, transmissions and tires.

### Plan Helps Buyers

A third factor present in formulating plans for the display room was the desire to familiarize buyers with every parts item they were purchasing, without necessitating their making repeated trips to the production lines; also, the plan made it possible for the buyer to have constant access to any and all parts which he might need.

With the above thoughts in mind, the Purchasing Department sought the cooperation of Research, Engineering, Production, Methods, Stores, and Cost Departments in



E. F. Schumacher, Assistant Purchasing Agent, handles most of the purchased production parts going into the manufacture of LeTourneau's earthmoving machines.

order to set up the display room and devise a procedure to make the idea serve all concerned to best advantage.

To begin with, it was necessary to prepare a list of parts which could be displayed to advantage and be suggestive of new methods of manufacture or purchase. This list was carefully chosen from all parts going into the manufacture of Dozers, Carryall Scrapers, Power Control Units, Rooters, Sheep's Foot Rollers, Tournapulls, Tournarope, Tournatrailers, Tournaweld, and Tournacranes—LeTourneau's complete line of earthmoving machinery.

### Representative Parts Chosen

The job of selecting representative parts from each type or group of parts (manufactured by LeTourneau as well as those already being purchased outside), involved careful scrutiny inasmuch as the limits of space did not permit the display of all items. There are actually hundreds of similar parts other than those appearing on exhibit, which are handled in accordance with the procedure described herein.

Choice of samples for the display room was made with particular at-

tention being paid to size, usage within their group, and adaptability to display. These are a few examples of the items exhibited:

- Nuts
- Rollers
- Bushings
- Shafts
- Cotter Pins
- Capscrews
- Cones
- Eyebolts
- Wrenches
- Links
- Adaptors
- Cone Linings
- Bearings
- Retainers
- Pinions
- Gaskets
- Spacers
- Springs
- Gears

### Display Well Located

The display room itself immediately adjoins the office of the Assistant Purchasing Agent, who buys most of the purchased parts for the company. It is readily accessible as well to others in the department and to the plant as a whole. Then, too, it is designed so that salesmen and other visitors to the Purchasing



Department pass it as they are admitted to the department. The room itself is 11 x 16 ft. in size, with the display fixture occupying three walls.

Smaller parts exhibited are arranged on swinging panels somewhat in book form. Larger and heavier pieces that would be difficult to handle otherwise, are displayed on shelves behind glass doors. Still others are enclosed in lower compartments of the cabinet-type fixture.

inquiries on particular parts suggested for purchase, actual checks into manufacturing methods and machine burdens are made to see that all phases of the change would be to the company's advantage. In some cases, method improvements can be brought about which might very materially reduce manufacturing cost and perhaps make purchase of the part impractical.

When it has been determined that a particular part may be properly considered for purchase, a

method of checking any parts at any time, and all the related information will be at finger tips for reference.

#### Cost Per Pound

To assist the Buyer further in determining costs and enabling him to make intelligent recommendations and decisions, a laboratory scale with capacity of 30 pounds and graduations of 1/4 ounces, was included in equipment for the display room. This scale is used by



Over 300 purchased parts go into the manufacture of these Super-C Tournapulls, one of LeTourneau's earthmoving machines which are helping speed victory in battle areas all over the world. Representative samples of these parts are on exhibit in the Purchasing Department Display Room at the Peoria plant.

To incorporate all parts into a workable, complete list, a card file is being developed, to index the parts by number. On each card will appear a list of all items manufactured or purchased which are similar to the one on the display board. Information on similar items is obtained from the Engineering Department cross-reference file, and on purchased parts from the Stores Department file.

#### Information on Costs

New parts may be added to the display from time to time, and information picked up on similar items and added to the file. In this manner the display itself will be kept up-to-date, new parts added, and obsolete parts removed. All parts on display are identified by their LeTourneau number.

Before the Buyer sends out any

Quotation Record sheet (Form #K-521) is filled out, giving LeTourneau's unit cost of manufacture, the quantity used over a period of several years, part number, and description of the part. A procedure will soon be completed whereby the similar parts file will be checked for like items manufactured on which inquiry might be sent out at the same time.

When bids are received in response to the requests sent out, this information is filed in the same folder with the Quotation Record, according to part number, and all bids recorded on the form, thus showing at a glance all competitive bids. If bids are received on several other items from the same request, the space provided in the "filed" column is used to indicate where the actual correspondence is placed. This plan provides a systematic

the Buyer in checking quotations and determining the per pound cost on every item. It has proven a means of effecting considerable savings to the company.

The display room has been in operation for six months, and has already paid for itself several times over as a result of savings which were made possible by the procedure set up around it. Here are just a few examples of the subcontracting brought about by this system, and the savings effected thereby:

#### \$7,170 Per Year Saved on One Item

A certain bolt had been machined from hex stock by LeTourneau at a cost of \$.1427 each. After the display room had been set up, the Buyer determined that this part could be forged instead of machined



**I**T was several weeks before the Armistice of World War 1 that the military leaders, perceiving the likelihood of an end to hostilities, called in procurement officers to prepare for termination of contracts.

While the level of war production in that era can hardly be compared with the current output, the lack of preparation for termination resulted in a period of confusion and litigation that continued over a long period of time.

To avoid a recurrence of these conditions, the Readjustment Divi-



**COL. D. N. HAUSEMAN**  
Director, Readjustment Division  
Army Service Forces

the contract, it is suggested by the Readjustment Division that the contractor work with the contracting officer to insert the uniform clause—and where a termination clause is in the contract, it is further suggested that the old clause be discarded, in favor of the uniform clause.

Another important pre-termination job is for the termination department to review and study the backlog of contracts to see that all subcontracts are properly identified with the primes, so that any termina-

## GET GOING ON TERMINATION

By A. N. WECKSLER

sion of the Army Service Forces is recommending that industry should prepare now for termination. This advice is predicated not on a quick ending of the war, but on the premise that changes in war production have already created termination and surplus problems, and that these problems will multiply.

Col. D. N. Hauseman, Director of the Readjustment Division, firmly advocates to both Government and business to keep the contractual slate clean in preparation for termination of contracts. The Readjustment Division establishes policies on termination and surplus disposal for the Army Service Forces and the air forces of the War Department. These policies and procedures are administered by the contracting officers in the field.

Officials of the Readjustment Division take the position that all war contractors should begin now to work with the contracting officers to prepare the bases upon which their contracts can be terminated.

Specific suggestions are offered on how to proceed.

First, some thought should be given to the person or persons who will represent the contractor in termination negotiations. Termination is a function which calls for top management skill, keeping in mind that the individuals chosen to

negotiate must be empowered to make a settlement.

The personnel selected to plan and execute terminations should not be taken off production—in fact, it is a good pointer that contracts will be taken apart in the same fashion as they were put together, and on this account will require the same type of skills and authority.

The termination group or committee selected might well consist of representatives of the company's purchasing, engineering, planning, legal, fiscal and other established departments. Upon selection of personnel, the termination staff or group should be given specific powers and authority by the Board of Directors or company heads, depending on the company's structure.

One important pre-termination step is cleaning up contracts so that the terms are fully incorporated, and a number of verbal understandings between the contracting officer and the company do not fog up the basis for terminations. The uniform termination clause developed by Bernard M. Baruch should be incorporated. While this is not mandatory, it will remove any impediment on this score—and any clause which varies from the uniform one might only create litigation, without benefit to the company.

Where no termination clause is in

tion procedure developed between the contracting officer and the company can be worked out with the holders of subcontracts.

The Government has no relations with the subcontractors, but the speed with which the Government can settle with prime contractors is largely dependent upon the proper agreements on settlement between primes and subcontractors.

A problem that parallels termination is the disposal of surplus property. The Readjustment Division suggests as a possible solution that the contractors establish special sales units to determine markets and establish values for surpluses. In view of the change in market values that will undoubtedly develop when the quantity of surplus material increases, a realistic approach toward disposal is definitely desirable.

Arrangement of finances is another problem that can be approached at this time. The prime contractor will need to pay off his subs. He may also wish to buy some of the surplus material for his own use. He may need special financing to accomplish this. The Government is arranging to make partial payments on contractors' statement of charges and costs before terminations are finally concluded, and it will be of value in this connection

*Continued on page 288*





**ALBERT KORSAN**, veteran Purchasing Agent of the Globe Steel Tubes Company, Milwaukee. His policies and foresight have kept production schedules moving smoothly through difficult times.



**F. S. PERKINS**, Assistant Purchasing Agent, shares the responsibility for maintaining adequate stores.



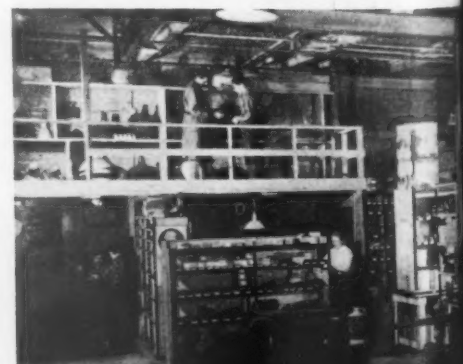
General view of the purchasing department, looking toward Mr. Perkins' office.



Stationery stores are kept clean and orderly in closed cabinets adjacent to the purchasing department.

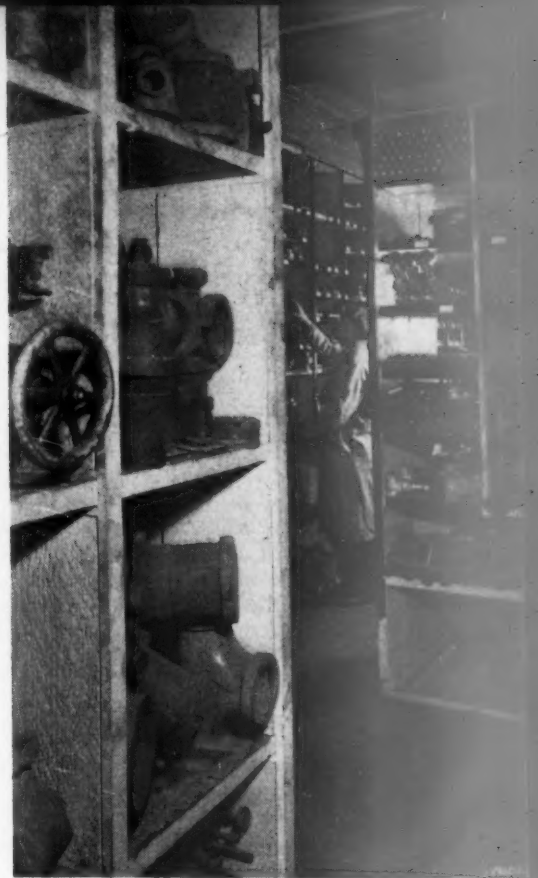


(Below) Issue and use of materials and supplies are under close control through the general stores.



# GOOD HOUSEKEEPING FOR BETTER STORES CONTROL

The Globe Steel Tubes Company has found that clean and well organized stockrooms effectively supplement good purchasing in providing an efficient service of supply.



A special section is devoted to pipe fittings and accessories.

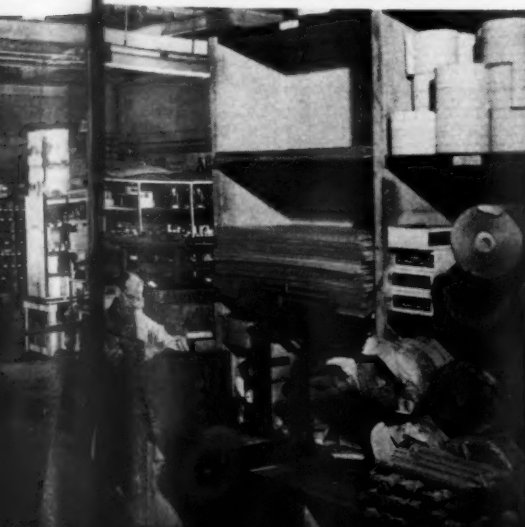
(Below) Office of the General Storekeeper, where records of materials and requirements are maintained.



(Below) The electrical section of the store room is typical—clean, well lighted, and clearly marked.



(Lower right) The oil stores section is a model of cleanliness. Large tanks are on the floor below.



# Basic Data Sheets Help the Buyer to SELECT THE RIGHT COAL

By HENRY T. COATES  
Purchasing Agent  
Dairymen's League Cooperative Ass'n.

**T**HE National Association of Purchasing Agents, 11 Park Place, New York City, has just issued a set of forms for collecting information to be used in the selecting of coal for steam boiler plants. These include all of the items connected with the boiler plant which have bearing on this subject, arranged in a convenient manner, and are the result of an extensive study made by its Coal Committee.

Most of the items covered have been used for selecting coal, but this is the first standard arrangement of which we know that can be used by the combustion engineer and the coal buyer, bringing them into complete

understanding and enabling all boiler plants throughout the country to be surveyed for these characteristics, something that has been very badly needed in the past.

The buying of coal is an important matter to many of this magazine's readers. Most coal buyers so greatly lack information of this nature that they have little opportunity to select coals and are inclined to purchase what someone has recommended without a real combustion study, or use the trial and error method, which may be expensive or otherwise unsatisfactory.

Two of these forms contain the information that is only changed when the equipment is changed and need therefore to be filled in only once for any particular equipment or layout. A third form covers information that should be collected

periodically, at least once a year. The fourth form is the active one and should be filled in frequently, especially when changing coals. Form V is a simplified manner of reporting a coal trial.

If the plant operator, the combustion engineer, the coal buyer, and the coal salesman all use these forms, they will have a better understanding of the conditions surrounding the boiler plant operation and the varieties of coal that can be used in it satisfactorily. It is possible too that if this becomes common practice, engineers in designing power plants will have available much better information on the size and type of loads carried, what fuel is available, etc.

These forms will be made available by the Association to anyone interested.

## Form I—HANDLING AND FIRING EQUIPMENT

This information will have to be collected only once and revised only when the boiler plant equipment or layout is changed. It covers the equipment used in getting the coal from the boat, railroad car, or other conveyance into the fire, and disposal of the ash. It will be readily seen that the information called for may be a large factor in the choice of coals. Some of these items may be unimportant in one plant but very important in another. Those operating a plant will know what ones to include and what ones to leave unanswered.

## Form II—BOILER DIMENSIONS AND EQUIPMENT

This information will have to be collected only once and revised only when the boiler plant equipment or layout is changed. Most of these items apply to all boiler installations. There may be some, however, that do not apply and for which an answer will not be needed. Many coal buyers and engineers will not use all of this information regularly, but will find it handy if trouble develops and in revising their buying and operating practices.

## Form III—OPERATING INFORMATION

This information should be collected from time to time, at least annually, and for most plants monthly. These items cover the operation of the plant from day to day and show the coal buyer what to expect normally. They should help in enlarging his field of selection, at the same time showing him how well his coal he has been furnishing has been performing.

## Form IV—COAL EXPERIENCE

This ties together the information collected on Forms I, II, and III, and should be used frequently, especially when changing coals. The information collected on this form will serve as a checkup on what the power plant has found by experience, and gives the operator an opportunity to express his opinion, which is valuable to the buyer.

## Form V—COAL TRIAL

This should be used whenever making a coal trial. It is drawn up in a very simplified form and is not intended as a report of a scientific boiler test. It provides for the essentials that will give a comparison between one coal and another and will systematize these trials for comparison and record, thereby increasing the value of such trials.

## FORM I HANDLING AND FIRING EQUIPMENT

1. Date \_\_\_\_\_ 2. Plant Name \_\_\_\_\_
3. Plant Location and Railroad \_\_\_\_\_
4. Siding or Dock \_\_\_\_\_
5. Type of Delivery Equipment \_\_\_\_\_
6. Tons of Coal Normally Stored: Active \_\_\_\_\_ Inactive \_\_\_\_\_
7. Tons of Additional Coal that can be stored without extra handling cost \_\_\_\_\_
8. Unloading Capacity (tons per hour) \_\_\_\_\_
9. Delivering Equipment: \_\_\_\_\_  
Boat \_\_\_\_\_ Car \_\_\_\_\_ Truck \_\_\_\_\_
10. Coal Handling Facilities:  
a. Crane from car or boat to bin \_\_\_\_\_  
b. Fixed Conveyor to bin \_\_\_\_\_  
c. Fixed Conveyor to stoker or pulverizer \_\_\_\_\_  
d. Portable Conveyor \_\_\_\_\_  
e. Hand from bottom of car \_\_\_\_\_  
f. Hand over side of car \_\_\_\_\_  
g. Method of storing \_\_\_\_\_  
h. Other \_\_\_\_\_
11. Coal Crushers, make and type \_\_\_\_\_
12. Coal Pulverizers, make and type \_\_\_\_\_
13. Method of Firing:  
a. Pulverized Coal Burner, make and type \_\_\_\_\_  
b. Stoker, make and type \_\_\_\_\_  
c. Hand \_\_\_\_\_
14. Scales: Coal \_\_\_\_\_ Ash \_\_\_\_\_
15. Ash Disposal Facilities \_\_\_\_\_
16. Clinker Grinder \_\_\_\_\_

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# **FORM II** **BOILER DIMENSIONS AND EQUIPMENT**

1. Date \_\_\_\_\_ 2. Plant Name \_\_\_\_\_
3. Plant Location \_\_\_\_\_
4. Boilers, Type and Numbers \_\_\_\_\_
5. Makes \_\_\_\_\_
6. Method of Baffling \_\_\_\_\_
7. Steam Pressure, Lbs. per sq. inch \_\_\_\_\_
8. Designed Rating, Lbs. steam per hr. \_\_\_\_\_
9. Bridge Wall, Clearance above, inches \_\_\_\_\_
10. Total Heating Surface, Water Covered, sq. ft. \_\_\_\_\_
11. Heating Surface of Water Walls, sq. ft. \_\_\_\_\_
12. Heating Surface, superheat, sq. ft. \_\_\_\_\_
13. Heating Surface of Economizer or Pre-heater \_\_\_\_\_
14. Feedwater Heater, type \_\_\_\_\_
15. Furnace, Average:
  - a. Width, ft. \_\_\_\_\_
  - b. Depth, ft. \_\_\_\_\_
  - c. Height, ft. \_\_\_\_\_
  - d. B.T.U. release designed for \_\_\_\_\_
16. Projected Grate Area \_\_\_\_\_
17. Type of Grates or Bottom \_\_\_\_\_
18. Volume Combustion Space, cu. ft. \_\_\_\_\_
19. Type of Furnace Walls \_\_\_\_\_
20. Radiant Heating Surface, sq. ft. of brick \_\_\_\_\_
21. Soot Blowers, make and type \_\_\_\_\_
22. Air Supply:
  - a. Gauges \_\_\_\_\_
  - b. Area of openings, sq. ft. \_\_\_\_\_
  - c. Control, hand or automatic \_\_\_\_\_
23. Draft Fans, make and type \_\_\_\_\_
24. Stacks:
  - a. Number \_\_\_\_\_
  - b. Height above boiler room floor, ft. \_\_\_\_\_
  - c. Diameter at top, inches \_\_\_\_\_

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# **FORM III** **OPERATING INFORMATION**

(Information is at average or normal rate of operation except where noted)

1. Date \_\_\_\_\_ 2. Plant Name \_\_\_\_\_
3. Plant Location \_\_\_\_\_
4. Tons Coal Consumed per month \_\_\_\_\_
5. Seasonal Variations in Consumption \_\_\_\_\_
6. Coal Handling Cost per Ton, Active \_\_\_\_\_ Stored \_\_\_\_\_
7. Weight of Ash per day \_\_\_\_\_
8. Ash Disposal Cost per Ton Ash \_\_\_\_\_
9. Ash Disposal Method \_\_\_\_\_
10. Condition of Furnace \_\_\_\_\_
11. Boiler Scale Conditions \_\_\_\_\_
12. Burning Rate (Giving No. Boilers used with each item):
 

a. Average Lbs. coal per hr. _____	No. Boilers _____
b. Maximum Lbs. coal per hr. _____	_____
c. Hours maximum load _____	_____
d. Hours banked _____	_____
13. Temperatures (Avg. 'F.)
 

	Minimum	Maximum	Normal
a. No. Boilers on line _____	_____	_____	_____
b. Feed Water _____	_____	_____	_____
c. Air Supply _____	_____	_____	_____
d. Furnace _____	_____	_____	_____
e. Stack _____	_____	_____	_____
14. Draft (inches of water) \_\_\_\_\_
15. CO, (%) \_\_\_\_\_
16. Evaporation, actual  
Lbs. water per lb. coal \_\_\_\_\_
17. Efficiency (%) \_\_\_\_\_
18. Labor:
  - a. Total No. men required to operate boilers per day \_\_\_\_\_
  - b. Number of shifts \_\_\_\_\_
  - c. Number of firemen per shift \_\_\_\_\_

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# **FORM IV** **COAL EXPERIENCE**

1. Date \_\_\_\_\_ 2. Plant Name \_\_\_\_\_
3. Plant Location \_\_\_\_\_
4. Size of Coal Suitable \_\_\_\_\_
5. Size Preferred \_\_\_\_\_
6. Is Ash Softening Temperature a ruling factor? \_\_\_\_\_
7. Description of Desirable Coal:
  - a. Seam \_\_\_\_\_
  - b. Shipping Point or Mine \_\_\_\_\_
  - c. Moisture \_\_\_\_\_
  - d. Volatile dry basis \_\_\_\_\_
  - e. Fixed Carbon, dry basis \_\_\_\_\_
  - f. Ash, dry basis \_\_\_\_\_
  - g. Sulphur, dry basis \_\_\_\_\_
  - h. B. T. U., dry basis \_\_\_\_\_
  - i. Ash Softening Temperature \_\_\_\_\_
  - j. Grindability:
    - (1) Minimum Index \_\_\_\_\_
    - (2) Maximum Index \_\_\_\_\_
  - k. Washed \_\_\_\_\_
  - l. Treated \_\_\_\_\_
8. Burning Characteristics:
  - a. Coking \_\_\_\_\_
  - b. Caking \_\_\_\_\_
  - c. Free burning \_\_\_\_\_
9. Does Flame impinge on water cooled surface of boiler? \_\_\_\_\_
10. Where? \_\_\_\_\_
11. Percent Combustible in Ash \_\_\_\_\_
12. Troubles (at Maximum Operation):
  - a. Lack of Steam \_\_\_\_\_
  - b. Clinker \_\_\_\_\_
  - c. Smoke \_\_\_\_\_
  - d. Slagging \_\_\_\_\_
  - e. Heating in Storage (at normal operation) \_\_\_\_\_
  - f. Freezing \_\_\_\_\_
  - g. Dust \_\_\_\_\_
  - h. Fly Ash \_\_\_\_\_
13. Coal Satisfactory \_\_\_\_\_
14. Coal not Satisfactory \_\_\_\_\_
15. Coal Preferred \_\_\_\_\_

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# **FORM V** **COAL TRIAL**

- |                        |                                 |
|------------------------|---------------------------------|
| Shipper _____          | Seller _____                    |
| Mine _____             | Seam _____                      |
| Capacity _____         | Preparation _____               |
| Location _____         | District _____                  |
| Price _____            | Frt. Rate _____                 |
| No. Cars Shipped _____ | Size _____                      |
| Date Burned—From _____ | to _____                        |
|                        | Time in Transit _____           |
|                        | Divd. Cost _____                |
|                        | Cost Per Million B. T. U. _____ |
|                        | Condition _____                 |

## **ANALYSIS**

	As Received	Shipper's	Shipper's	Dry
	Shipper's	Laboratory's	Laboratory's	Laboratory's
1. Moisture _____	_____	_____	_____	_____
2. Volatile _____	_____	_____	_____	_____
3. Fixed Carbon _____	_____	_____	_____	_____
4. Ash _____	_____	_____	_____	_____
5. Sulphur _____	_____	_____	_____	_____
6. B. T. U. _____	_____	_____	_____	_____
7. Initial Softening Temp. _____	_____	_____	_____	_____
8. Fusing Temperature _____	_____	_____	_____	_____
9. Fluid Temperature _____	_____	_____	_____	_____
10. Grindability _____	_____	_____	_____	_____

## **OPERATING DEPARTMENT REPORT**

- |                                       |                       |                                       |                       |
|---------------------------------------|-----------------------|---------------------------------------|-----------------------|
| Boiler No. _____                      | Avg. Rating _____     | Peak Load 15 Min. _____               | Pressure _____        |
| Air Supply Temperature _____          | Rating Comment _____  |                                       |                       |
| Pulverizer _____                      | Condition _____       | Amp. _____                            | K. W. per Ton _____   |
| Stoker _____                          |                       |                                       |                       |
| Foreign Material _____                |                       |                                       |                       |
| Condition of Furnace Before Run _____ | After Run _____       |                                       |                       |
| Condition of Bottom _____             | Walls _____           | Tubes _____                           |                       |
| Evaporation Actual _____              | F & A _____           | Character of Ash, % Combustible _____ | Type of Clinker _____ |
| On _____                              | Steam Cost—Coal _____ | Total Steam Cost _____                | Coal Classified _____ |

## **COMMENTS**

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# UTILITY BUYERS CONVENE

**Purchasing executives are commended for wartime accomplishments, and are warned that greater responsibilities lie ahead**

**“W**E in the Operating Department have come to appreciate what the purchasing men can do to lighten our load,” declared J. L. Bates of the Central Power & Light Co., Corpus Christi, Texas, at the Midwinter Conference of the Public Utilities Buyers Group of the National Association of Purchasing Agents, held at the Edgewater Beach Hotel, Chicago, January 24 and 25. “I predict,” he continued, “that you will have the opportunity to render an even more valuable service after the war as we adopt some of the methods that we have learned during wartime.”

Mr. Bates was one of several operating men commenting most favorably upon the accomplishments of members of the purchasing fraternity, during the meeting which was attended by 125 members of the Utilities Buyers Group, of which M. B. Covell of the Union Electric Company of Missouri, St. Louis, is chairman.

Following a brief address of welcome by Thomas J. Anderson, President of the Chicago Association, and Purchasing Agent of the Acme Steel Co., Mr. Covell intro-

duced President Ben R. Newbery of the National Association.

“I do not know of any group that has been under greater pressure than the Purchasing Agents for public utilities during the war emergency,” stated Mr. Newbery. “Of necessity we have had to work with less materials, and at the same time find the materials that were difficult to obtain. Curtailed operations and lesser use of critical materials was necessary. We have been faced with decreasing inventories to a point far below that to which we are accustomed and which we feel necessary for safe operation. I think it is a tribute to the P. A’s that the ‘old bus’ has been kept together. I know of no serious misfortune attending the operations of the utilities in spite of the problems that we have had to solve.

“We are already beginning to pass from a sellers’ market, the tightest we Purchasing Agents have ever seen, into a buyers’ market. The transition period will be slow, but we now hear of surpluses which we must look upon as ‘small change’ compared to what they will be when the shut-down order comes

on war production. Some of the surplus figures we are now receiving may seem staggering, but I warn that they are infinitesimal compared to what they will be later on. There will be huge surpluses in practically everything.

“The feeling is developing that we will not be in for a period of inflation such as we have been looking for; just the reverse, it may be that we are in for a declining price period incident to the huge war surpluses and the stupendous production facilities of industry.

“We Purchasing Agents will have new responsibilities in figuring which way this thing is really going to go. Purchasing Agents have the reputation of being calm, thoughtful men, and there certainly will be no time in our history when those qualities will be needed more than in the period before us.”

## **“His” in the Coal Situation**

The Monday afternoon session was presided over by Jack Orrick of the Gulf States Utilities, Beaumont, Texas. The first speaker introduced was H. V. Erben, Manager, Central Stations Department,

**Left: Delegates arriving for the Midwinter Conference**

**Below: Chairman Covell opens the meeting**



General Electric Co., Schenectady, N. Y., who presented an unusually practical paper on "Long Range Values in Standardization of Electrical Apparatus." Mr. Erben's discussion appears elsewhere in this issue.

The next speaker was Executive Secretary John Battle of the National Coal Association, Washington, D. C. He said in part:

"We have plenty of coal in the ground. There need be no fears along that line. Taking the country as a whole, there has been enough coal to go around, had it been equitably distributed—speaking only of bituminous coal. Anthracite is a different story.

"There have been shortages of bituminous in particular purpose fuels in some localities, attributable to maldistribution, which is something that the Solid Fuels Administration in Washington is now undertaking to correct. But what saved the fuel situation, taking the country as a whole, were the stock piles which had been built up as a safeguard for just such emergencies. The electric utilities have been conspicuous in their adherence to the policy of building up reserve stocks, so far as circumstances permitted, but, of course, now your reserve stocks are fixed by Government decree."

Speaking on the prospects for the immediate future, he said: "Frankly, we are greatly concerned with the period just ahead of us, and for good reasons. So much depends on the government that it is difficult to make plans. The coal is in the ground. We are faced with a practical problem of getting it out. We have lost thousands of experienced men to the armed forces and to other war industries. We are continuing to lose men. We find ourselves pleading with the government to stop taking these men who are essential to wartime coal production. Some little progress has been made, but the trend continues away from the mines. We also find it difficult to get the materials and supplies necessary to keep the mines going at an accelerated rate. Our equipment is wearing out rapidly, replacements must be made, and while WPB has done well under adverse conditions, there is much equipment needed now. These are the 'ifs' in the problem. Failing to secure these tools of industry, the outlook is none too good.

"We know that when the war is over we will be faced with severe

competition from several sources. We are not among those who think our great oil industry is doomed, nor is gas going to be idle. From what I can see, the natural gas industry is very much alive and will be in the front line contending for markets. Then we have the old problem of government subsidized hydro-electric power plants, which in times past gave us all some trouble. We don't like that system. We want no such competition, and will oppose such projects as heretofore.

"Research is playing a part in our future plans to a point never before approached. From our laboratories will come new uses for coal, better combustion, smoke prevention, and dozens of other things that are too technical for me to explain. I am sure that we are on the road to a better and wider use of coal when normalcy returns."

#### Outstanding Achievements

Robert Graves of Kansas City, presided over the morning session of January 25, first introducing Edward Falck, Deputy Director, Office of War Utilities, Washington, D. C., who spoke on "Adjustment of Utility Programs for 1944."

Mr. Falck paid high tribute to the utilities for their achievements under the stress of war conditions, and for commendable resourcefulness in devising new and efficient ways of doing their wartime job, with a view to economizing in materials, equipment and fuels. "The importance of this job," he continued, "is illustrated by the record of electric, gas and water utilities operating under Utilities Order U-1. During 1943 these utilities used materials for maintenance, repair and operating supplies valued at \$121 million, which was only 53% of the value of materials used in 1940. Moreover, of the total

Top: N.A.P.A. President Ben Newbery addressed the opening session

Top Center: President Ben Newbery of the National Association talks things over with President T. J. Anderson of the Chicago Association

Lower Center: J. R. Millikan of the Dallas Power & Light Co., Secretary of the Public Utility Buyers Group

Right: B. R. Newbery of Dallas, Mark Covell of St. Louis, J. R. Millikan of Dallas, and T. J. Anderson of Chicago





amount of materials used in 1943, 33% came from salvage, 12% from excess inventories, and only 55% from prime suppliers, with the result that the draft on the national stockpile of raw materials and on the nation's manufacturing facilities during 1943 represented a reduction of about 75% below 1940.

"These tremendous savings in material were accomplished by the utility industries notwithstanding the fact that they carried in 1943 a load never before experienced in their history. Even if the government's orders and regulations were as perfect as human ingenuity could devise, they would have failed in practical effect had it not been for the cooperative and expert execution in the field by the utilities who are subject to the orders.

"The outlook for 1944 is speculative insofar as it depends upon military developments as to which we have no present knowledge. However, we can arrive at certain general conclusions based upon the present known supply and demand for controlled and other materials.

"From the reports and programs submitted to the Requirements Committee by the military and non-military agencies, it now appears that a satisfactory balance is in prospect for most of the materials required for the projected war program. The controlled materials—steel, copper and aluminum—are in adequate supply considered as raw materials. That is, there is no shortage of basic ores or ingot producing capacity.

"Most basic chemicals show a satisfactory balance between supply and requirements. Some of the chemicals used in the manufacture of high octane gasoline and synthetic rubber are tight. There is a very serious shortage of certain materials, such as lumber, paper, textiles and leather. It should be borne in mind that for all of the materials now in surplus supply, the surplus is to some extent an artificial one because the requirements against which the supply is compared are *restricted* requirements. If the limitation orders imposed on industry by the War Production Board were suddenly revoked, requirements for particular materials would increase sharply and a shortage would be immediately in prospect.

"The Office of War Utilities is now at work on revision of its basic orders. You have just received a new edition of Utilities Order U-1 which has undergone a complete

'face lifting.' Most of these changes have been designed for the purpose of simplifying the form of the orders and their administration, reducing the number of controls, minimizing the paper work, and decentralizing the reviewing responsibility from Washington to the field. This process of simplification and decentralization will continue as we gain further experience and knowledge. However, most of these changes would be in order even though the materials situation continued to be tight.

"In contrast to the work of simplification, relaxation is being considered with a view to removing controls when and as additional resources become available. Important relaxations must necessarily await military successes and the reduction in military procurement that will follow. Any increases in production which are authorized now must continue to be predicated upon the essentiality of the end product in relation to the war program.

"This problem was discussed thoroughly by the top staff of the War Production at its January 11 meeting, and it was unanimously decided that restrictions on new construction and facilities should continue in effect until the probable future course of the war makes it certain that a relaxation will not injure the war effort. However, because prospective improvements in the supply of materials make it probable that production may be expanded during 1944 without injury to the war effort, the Claimant Agencies are now attempting to develop additional or enlarged programs which could be put into effect later in 1944 if circumstances make such action advisable.

"The Office of War Utilities accordingly has developed several programs for using additional materials by relaxing present restrictions on utility equipment and construction. These several programs will be held in abeyance until such time as materials and manhours can properly be devoted to less essential purposes than at present.

"In considering the entire group of proposed additional or enlarged programs there is no question that electric, gas, water and communications services should be placed high in the order of priority.

"In the electric power field we have already taken steps to permit copper and aluminum conductor in place of steel wire, and to permit the use of larger sizes of conductor.

When additional resources become available it is planned to permit the use of larger sizes of transformers.

"We have already relaxed restrictions to permit the use of steel transmission towers and expect that similar changes can be made in the future so that the utilities will again be able to use the type of construction which is dictated by economy and service considerations. We are looking forward to liberalizing the restrictions on short urban extensions and service to farms.

"While we are not yet prepared to ease inventory controls generally throughout the country, we are prepared to increase the allowable quotas for utilities on the West Coast because of the special demands that may be imposed in that area during the next year or two.

"Similarly, while we are not prepared to authorize the purchase of switching, sub-station, transmission and distribution facilities on a peacetime basis, we are prepared to authorize the acquisition of this type of equipment to take care of weak spots which may have developed on particular systems."

#### Amendment of Order U-1

Paul B. Valle, Administrator, Order U-1, Office of War Utilities, Washington, D. C., next reviewed a statement by J. A. Krug, Director, Office of War Utilities, in regard to a recent amendment of Utilities Order U-1, Section 4500.1, as of January 22.

The amendment represents a simplification of the procedures, regulations, and record-keeping required of utilities in connection with the purchase and use of materials for maintenance, repair, operating supplies, and for making minor plant additions under wartime conditions.

In addition to rearrangement and rewording for the purpose of clarification, the amended order eliminates the quantitative restrictions on withdrawals from inventories of material to be used for maintenance, repair and operating supplies. Previous controls on acceptance of deliveries for these purposes also are modified.

It also increases the permitted value of overhead construction from \$500 to \$1500. This change will remove the need of submitting for WPB approval applications for authority to undertake such work.

Utilities having inventories of \$10,000 or less are relieved from

*Continued on page 304*



Standardization and repetitive manufacture make large savings possible in manufacture.

able with special "one-of-a-kind" designs, except at prohibitive cost.

Why is standardization of particular importance to the utilities now?

It seems certain that the utilities will continue to be burdened with high tax loads and high labor costs after the war. In the face of continuing pressure for lower rates there is certainly no assurance that the resultant increase in operating costs can be compensated for by higher rates. Unless utility profits are to suffer, means must be found to reduce other items of cost. Standardization of electric apparatus may offer at least a partial solution, because experience shows that, in general:

(1) The installed cost of standard apparatus is lower than that of special or piece-meal designs. This results directly in a reduction in capital charges.

(2) The simplicity in specifying, ordering and co-ordinating purchases of standard apparatus, as well as the flexibility of its application (and the lowered cost of maintenance) result in savings in operating cost which, although difficult to estimate to the last dollar, are tangible and very considerable.

Standardization of electric apparatus is by no means a new and untried idea. The great reduction in cost and improvement in product which standardization has made possible on such items as incandescent lamps, watt-hour meters and wiring devices, are well known. Through the joint efforts of EEI and NEMA, important steps have been taken for simplification and standardization of power circuit breakers and distribution transformers. In the field of heavy apparatus, however, there has been almost no standardization. Indeed there was little interest in this direction until the war brought experience in the repetitive manufacture of equipment comparable generally with that used by utilities.

In our wartime experience, and in that of other manufacturers, it has been demonstrated that cost savings of a surprising magnitude, together with very tight quality control, are

Address at the Midwinter Meeting of the Public Utility Group, N. A. P. A., Chicago, January 24, 1944.

## Long Range Values in STANDARDIZATION of Electrical Apparatus

By H. V. ERBEN

Manager, Central Station Divisions, General Electric Co.

**Buyers can profit by the advantages of standardization only to the extent that the use of standard equipment becomes a definite part of purchasing policy**

**S**TANDARDIZATION of heavy electric apparatus means the channeling or directing of purchases into a relatively small number of types and ratings, selected so that they will meet the requirements of the vast majority of applications. By

concentrating engineering and manufacturing talent on fundamental improvements in these standard ratings, it will be possible for the electrical manufacturers to achieve a degree of perfection in design and in manufacturing methods which is unattain-



possible through standardization and repetitive manufacture. For example, at one of the new turbine shops set up for repetitive manufacture of propulsion turbines for destroyers and heavy cruisers, two years were required to produce the first 100 shafts. Turbines for the second 100 shafts were produced and shipped in seven months. The original production schedule at the plant called for only 48 shafts a year. Significant from a postwar standpoint is the fact that cost went down as production went up. This destroyer propulsion equipment, consisting of two turbines for gear drive, is now being furnished at a cost one-third less than that for the same equipment in 1939.

### Turbines

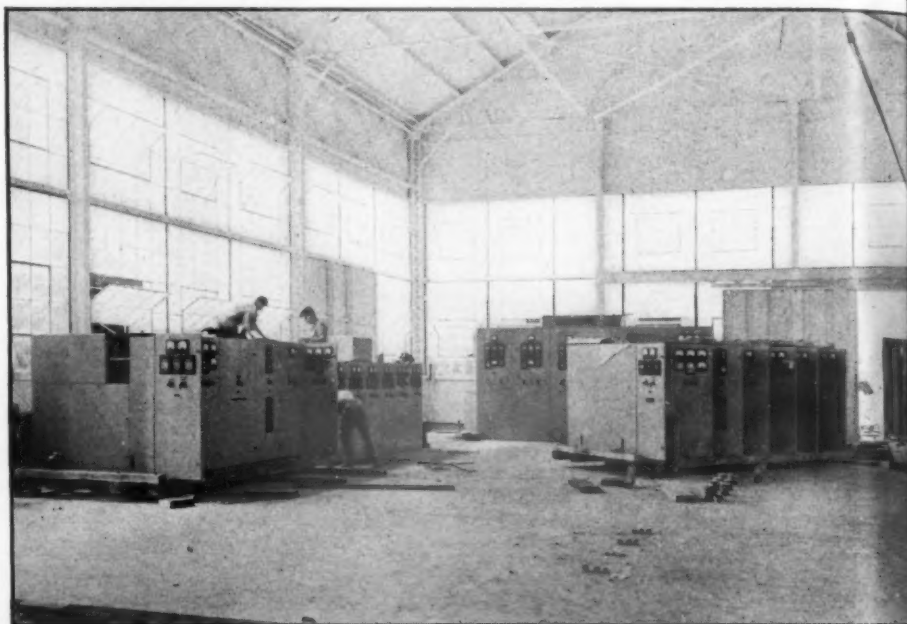
Since the discussion of heavy apparatus standardization at the EEI Annual Meeting last June, perhaps more interest has been shown in standardization of large land turbine generators than in any other type of equipment. This is probably due in part to the disclosures regarding wartime experience in turbine production and also due to the fact that turbine generators are large, costly, and spectacular. Yet, in my opinion, the large utility turbine is probably not the most likely field for standardization. Other lines of apparatus would seem to show much more promise of immediate results. This is so because even under the most optimistic estimates of post-war business in large turbine-generator sets, the number of units which a manufacturer may be called upon to build is quite small. However, an ASME Committee is working on the establishment of preferred sizes, temperatures and pressures for large land turbines, and it is likely that specifications for new machines will tend to cluster around these preferred ratings. Similar activity by AIEE is under way on generators.

Although savings as large as those obtained in the wartime production of ship propulsion turbines seem unlikely in the case of large utility units, because of the relatively smaller number purchased, there is still great opportunity for repetitive manufacture of important component parts. For example, identical exhaust hoods, governors, diaphragms, buckets, and even in some cases shells and shaft forgings, can be used for a variety of machine ratings. When the demand is sufficient, advance stocks of parts can be ordered and machined, and stock units may be partly fabricated. This would make possible shorter shipment and

at least some lowering of cost.

Repetitive manufacture of mechanical drive turbines has already reduced the price an average of 10% and produced a better product which can be built and shipped in a shorter time. In our case, one basic design in three standard sizes is applicable to a large variety of ratings. Engineering time formerly required for routine calculations incidental to special designs is now concentrated on fundamental developments and improvements in the line. Engineering progress has, therefore, been accelerated rather than retarded as many people have feared.

manufacture on cost of production is illustrated strikingly by our experience with a large order for power transformers for a war project. First, costs were determined based on conventional designs and manufacturing methods suitable for "one-of-a-kind" production. Then, because of the large number of units to be built, it was decided to design these units and plan our manufacturing operations in such a way that economies from repetitive manufacture would be made. Standard pre-assembled terminal boards and interchangeable cores and core clamps were adopted, and substantial economies



Delivery and assembly of switchgear units is speeded and simplified by standardization.

### Power Transformers

I believe that the power transformer offers the utilities and the manufacturers a most fruitful field for cooperative standardization. Yet to date only a start has been made. In 1941, studies along these lines were begun.

The line of standardized power transformer designs is rapidly being completed, and general acceptance of this program to date is gratifying. This is indicated by the receipt of more and more inquiries for propositions on standard ratings. Further economies in manufacturing costs and resultant lower price levels will be obtained if a larger percentage of total output is in standard ratings. Furthermore, very much shorter shipment is possible on these standard designs.

The effect of planned repetitive

were made in the load ratio control drive mechanism, reactor and housing. The transformers were put through the shop in batches of 20 or more at a time. When they were completed, it was found that the manufacturing cost of these transformers was very appreciably less than would have been the case if the same number of units had been built on many orders each covered by a different specification.

### Cable

In July, 1941, the AEIC published specifications for paper-insulated cable under what they called a "Simplified Practice Schedule". This covered preferred sizes, voltages, strandings and construction.

Although some utilities have followed these recommendations diligently, the general acceptance has been disappointing. Perhaps, be-



cause of the wartime restrictions on utility construction, purchases have not been made in sufficient volume to encourage the change in practice. On the other hand, the price reduction of about 2% may not have offered adequate inducement.

Little can be accomplished in the actual application of cable standards until the war is won, when restrictions on utility construction and CMP regulations governing the processing of copper are removed. At that time, if standards acceptable to the utilities have been established and are followed in practice (avoiding those seemingly slight varia-

ticle. Here, by careful study of the field requirements, it was found possible to develop a relatively few standard components which can be assembled into a great variety of combinations. For example, it was found that in the load center transformer standardization program there were 648 types of units that might be required for adequate coverage, yet the annual demand in any particular combination is in the order of 50 or less. Despite this great number of arrangements, the line is now covered by 18 standardized tanks, 18 cores, 2 junction boxes, 3 switches and 2 metal-enclosed in-

tions to bid were issued. In three more days, bids were in. After several days negotiation, an order was placed for unit substations, necessary connecting cable, structures, etc. The total elapsed time between authorization to proceed with this work, and the ordering of all apparatus was nine days.

However, at another camp it was decided to write specifications and take bids on a substation and distribution system, on a "nut and bolt" basis. After several weeks delay, very general specifications were issued. Bids were received on certain parts of the equipment, but none on other parts. Accordingly, it became necessary to rewrite the specifications and reissue them for bids. More than six weeks elapsed before all equipment was ordered. The power system cost per soldier at this camp was extremely high, and it was not very satisfactory in actual operation.

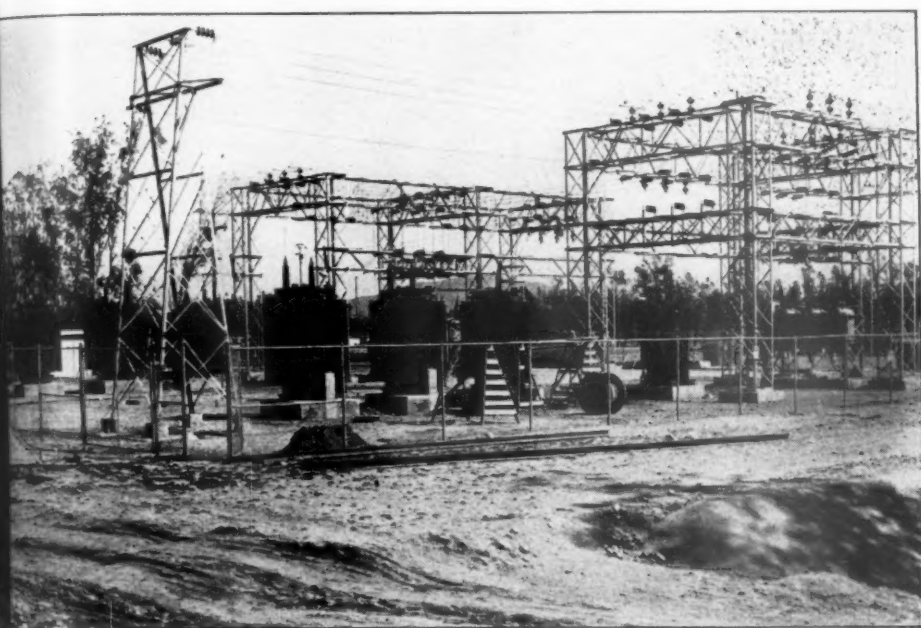
### Switchgear

Probably more attention has been directed to standardization in switchgear than to any other heavy apparatus line. A program of simplification of power circuit breakers was begun under the sponsorship of EEI, AEIC and NEMA more than 15 years ago. In 1928, manufacturers listed some 470 high voltage, outdoor type oil circuit breakers. Through the efforts of this Committee the number of outdoor ratings is now less than 50 (a reduction of 90%). The work is being continued, with the objective of further reduction to possibly not more than 25 ratings in this field. This standardization, and the repetitive manufacture which it made possible, has resulted in price levels for outdoor circuit breakers about 15% below those of 1937 or 1938. This has been accomplished in spite of large increases in material cost and wage rates during this period, and in spite of the extra cost of major improvements and refinements in the product.

Progress has also been made in the standardization of indoor station type breakers for 15 and 23 KVA service, 500,000 through 2,500,000 KVA interrupting capacity. The number of ratings in this field has been reduced from about 760 in 1928 to 18 today. In spite of the curtailment in large station construction over the past few years, standardization on the limited number of ratings has enabled us to make a 10% reduction in the price of station type breakers, since 1935.

The development of modern ver-

*Continued on page 278*



Standardization of power transformers began in 1941, and is gaining wide acceptance.

tions from standard which increase cost so much). I feel sure that the manufacturers will be able to offer more substantial price differentials in favor of the standards. Also, by accumulating materials and parts in advance of receipt of orders, they will be able to make shorter shipments.

However, right now is the time to discuss and decide on the standards. If any revision in the AEIC standards on paper insulated cable is needed, it should be made now. Also consideration should be given to the development of similar standards for other forms of cable used regularly by utilities.

### Unit Substations and Load Center Units

This equipment offers an interesting example of the application of standardization to a "package" ar-

terconnections to switchgear. This limited number of parts can be stocked in reasonable quantities of from 5 to 20, making possible marked savings in the cost of manufacture and greatly reducing the time for shipment.

The fact that users and contractors can save time (which means money) by purchasing standard unit substations and load center units is well illustrated by experiences with two Army camp power supply jobs in the Middle West. In one case, the customer's engineers were favorable to the use of unit substations. Our representative arrived at the camp site at 10 A.M. By 4 P.M. the decision to provide a 4 KV primary network had been made, location of lines and substation had been established and guide form specifications had been prepared. Three days later complete specifications and invita-

# INFLATION CAN STILL HAPPEN

By JAMES F. BROWNLEE

Deputy Administrator for Price,  
Office of Price Administration

**W**E are in the midst of two great wars, the war against our foreign enemies and the war against inflation. Neither war has yet been won. We shall win the military war, but we cannot win it with the least possible loss of life unless the determination and energies on the home front are increased.

We can confidently predict victory in the military war if we make the tremendous effort needed. We can confidently predict victory in the war against inflation if we make the tremendous effort needed there.

The outcome of the war against inflation now hangs in the balance simply because the efforts and sacrifices needed to guarantee victory on the stabilization front are not now being made in the degree required.

I do not need to remind businessmen of the catastrophe of defeat in the war against inflation. As a matter of fact, I know that we at OPA are not *one bit* more concerned about inflation than are you men of industry. The fact that we happen to be in Washington battling with this problem each day does not necessarily mean that our stake in winning this battle is as great or anywhere near as great as is your own. I do wonder, however, if you are fully aware of the absolute necessity of holding the line on cost-of-living prices. And I wonder whether you realize how thin this line is.

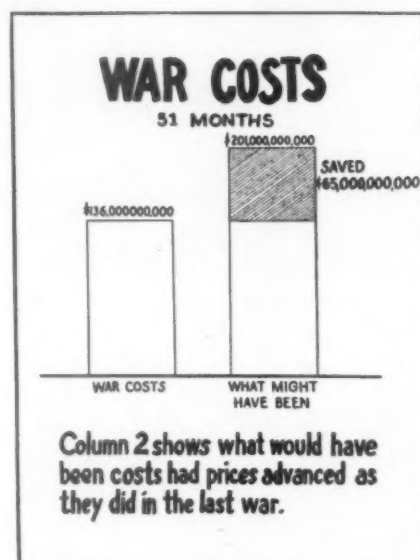
Increases in the cost of living not only constitute price inflation; they directly promote further price increases through their repercussions on farm prices and wages. According to law, maximum prices on farm products cannot be set below parity. And maximum prices on processed agricultural commodities must reflect parity. One element in the computation of parity is the prices paid by farmers. Thus a rise in the price of cost-of-living goods bought by farmers inevitably raises parity, and in turn, parity again raises prices. This is the familiar story of the dog chasing his tail around.

Secondly, increases in the cost of

living result in demands for wage increases. No one believes that as a practical matter wages can be effectively held if the cost of living is permitted to increase steadily. And these wage increases produce further price increases, not only by raising some prices but also by raising the amount buyers are able to pay. Some wage increases can be absorbed by the employer, but others cannot. Also, speaking in a completely realistic way, you must all face the fact, whether you like it or not, that labor has been more or less definitely assured that labor cannot be expected to go along with-

only line that we have. It is the plain duty of OPA to see that this line is held on prices so that the whole stabilization line can be held.

Unless the price line is held the present balance between cost-of-living prices, farm prices, and wages will be broken. If it is broken not only will it be hard to create any new balance at all; it will be completely impossible to do that except at a level way above the present line. At best, this would mean higher wages and prices with some new sort of balance. At worst, it would mean a continuous and rapidly mounting spiral of prices, wages, and other



out wage increases if the cost of living increases. And I can assure you that labor takes this assurance more literally than many of you realize.

Economic stabilization is impossible unless some sort of balance is struck between cost-of-living prices, farm prices, and wages. Once the balance is struck, this line on prices and wages must be thereafter held. This was the objective of the Stabilization Act of October 1942. Whether or not one likes the particular rough balance which has been worked out under that Act, it is the only balance and hence the

costs with no new line ever staked out. We do not fear the worst, but even the best is bad.

Let me ask you to put yourselves for a few minutes in our places in OPA at the present stage of the war against inflation, and let me tell you some of the problems that I think you would find yourselves facing.

(1) There is a grave crisis in the war against inflation. The present balance between cost-of-living prices, farm prices and wages is threatened—threatened much more seriously than I believe most of you realize. Every single price increase



# HERE

Economic stabilization depends on establishing—and holding—some fair balance between our cost-of-living prices, farm prices and wages

on cost-of-living items further jeopardizes this balance.

(2) In many places, labor has been frozen in its jobs. Transfers from these jobs require government approval. A working man may not lawfully walk out of one job into another job to secure higher pay unless the government permits it. The President has just pointed out to the Congress the necessity of a national service law which would, among



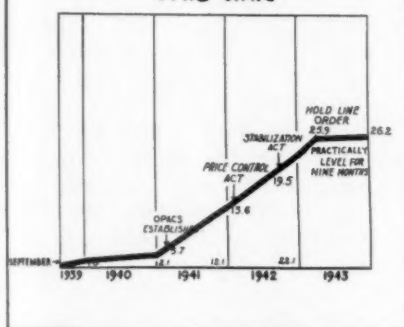
JAMES F. BROWNLEE

## LIVING COST RISE THIS WAR

FIRST 52 MONTHS

World War 1.....618%  
World War 2.....262%

THIS WAR



other things, strengthen the control over manpower and its use. He has also emphasized the necessity of renewal of the Stabilization Act to hold down wages as well as prices.

(3) The relation between labor costs and living costs bears the main threat to the stabilization program today. It is sometimes said that increases in prices of machinery and equipment cannot affect the cost of living. This is a shortsighted and incomplete view. A rise in the price of farm machinery would operate toward an increase in the cost of living. The price of farm machinery

is contained in the parity index, and a rise in parity would immediately force a rise in the price of feed, which would be reflected in the price of milk and butter and eggs.

Increases in the prices of processing machinery often will not have a direct and immediate effect on the cost of living. But they represent a part of the "creep" in costs which, if permitted to go far enough, requires increases in prices of manufactured articles entering the cost of living. Thus, in the broad view, it is very important to prevent price increases on machinery and equipment, as well as on materials and finished consumer goods. Effective stabilization of the cost of living is impossible without effective stabilization of all prices.

(4) An indirect increase in the cost of living has occurred through a shift in production from low-priced, low-profit products to higher-priced, higher-profit products. Every increase in the cost of living, direct or indirect, encourages further demands for wage increases. To protect the stability of labor costs, in all lines, it is imperative to restore production of the lower-price products. We must do this wherever humanly possible without any price increases. We must minimize any price increases that may be required. It is the duty of OPA under the statutes

and executive orders to prevent all price increases except where they are required by law or are plainly necessary to remove some real price impediment to a needed supply.

In the present crisis on the stabilization front it is doubly imperative that OPA take every possible measure to avoid price increases which are not plainly required. Let us all ask ourselves what would make ordinary good business sense in dealing with this situation on the price side.

There are several conceivable answers. One is that we should use price increases as a bait to buy back the low-profit products. In large part the reduction in volume of low-profit articles has resulted in a shift by manufacturers to more profitable products.

In ordinary times this sort of shift in production would properly be considered good business policy. In wartime, I personally think it is shortsighted business policy and it materially endangers the success of the war against inflation.

Similarly, price increases to buy back low-price products would be shortsighted price policy on the part of OPA. This would mean boosting prices to levels yielding margins on the low-price articles equal to those on the other products now in production. I do not seriously believe



that you will disagree with me in this judgment if you appreciate the total situation. Nor do I believe you will disagree with me when I say that it will be simply impossible for OPA so to arrange the relative prices of thousands of products to obtain just the needed supply of each.

In the war goods field, it was generally recognized long before Pearl Harbor that manipulation of maximum prices could not be relied upon as an effective instrument to get just the right amounts of materials and finished products needed for the war program. Here as there, chief reliance for the right amounts of production must be placed on the cooperation of the industry and on the War Production Board. OPA could do something in the way of lowering some prices with high margins while at the same time raising others with loss margins, but again, I think you will agree with me that in many cases this would not be the best solution.

The other extreme on price standards to deal with this problem is shown in the Canadian policy. In Canada, I understand that the government requires that the mills produce a certain historical proportion of low-end products irrespective of the cost-price relations as long as their overall profits are satisfactory.

In this country we are following a course midway between these two extremes. The war production agencies and the Armed Services use their procurement and production powers to control production through orders, production directives, allocations and priorities, and the like. OPA permits price increases where necessary to remove a real price impediment to effectuation of those controls. Fair administration requires that OPA treat all persons requesting price increases equally. This means that we must use the same standards for price adjustment for all who are in the same situation. We cannot bargain individually with people. That would mean that the least patriotic or the person with the most profitable array of opportunities would get the best price. That would be unfair and un-American. Nor can we give special privileges to manufacturers merely because they fear that buyers, accustomed to the present level, will resist paying higher prices after the war.

The common sense way for OPA to promote the twin objective of adequate production of essential war goods and essential civilian products

and effective economic stabilization is to limit price increases to cases where they are really needed and to permit in each instance only the amount that is needed and is fair in the circumstances. To carry out this policy we use individual price adjustments. Not all regulations contain individual adjustment provisions, of course, since they are used only where needed.

Our individual adjustment standards vary somewhat throughout the hard goods field to fit particular circumstances. The general principles used in the case of machinery and parts and subassemblies, farm equip-

## WAR MATERIALS PRICE INCREASES

### PERCENTAGE INCREASES

	WORLD WAR I (31 months)	WORLD WAR II (31 months)	WORLD WAR II (inflation peak)
Steel plates	187%	0%	695%
Pig iron	145%	14%	304%
Copper	93%	15%	165%
Zinc	80%	70%	345%
Anthracite coal	43%	26%	65%
Bituminous coal	135%	22%	264%
Lumber	71%	59%	72%
Tin	156%	0%	228%
Cement	76%	0%	276%
Coke	171%	19%	268%
Glass (plate)	81%	0%	81%
Petroleum	200%	13%	215%
Lead	106%	29%	195%
Wool (Wholesale)	203%	62%	264%
Cotton (Wholesale)	137%	106%	222%

ment, electrical equipment, steel castings, etc. are as follows. When a manufacturer incurs cost increases he is expected to absorb some part of them at least out of his overall profits on his total operations wherever those profits, before income and excess profits taxes, substantially exceed his profits in a representative peacetime base period, ordinarily 1936-39. He will, however, be permitted to raise his price on an essential item to cover his manufacturing cost. If his current profits are not greatly above his profits in the representative base period, he will be permitted to raise his price enough to cover his total cost. Further he is entitled to total cost plus a profit on the item if his overall profits are below those of the base period. Stoves, ranges, furnaces, and builders' hardware have somewhat similar adjustment provisions, with the emphasis on prevention of overall losses.

These are strict standards, but I believe you will agree with me that they are adequate to permit maximum production of essential products, are fair standards in a war

situation, and are required if the job of minimizing inflation is to be well done.

Some of you are looking ahead to the problems of reconversion to peacetime civilian production. I should like to add a few words about price control in relation to reconversion, although I cannot predict, of course, what action the Congress will take on the question of extension of price control beyond next June or what pricing standards will be most suitable for the transition or reconversion period if price control is continued through that period.

Frankly, we do not at present know what pricing standards would be most suitable for that period, because we do not know what the basic facts of the situation will be. According to the War Production Board and the Armed Services the requirements of the war production program will not permit much reconversion until the latter part of this year, at least. What will the situation be when reconversion on a substantial scale is possible? How large will the amount of continuing war production need to be? What will be the extent of cutbacks on products made in converted plants? To what extent can cutbacks and reconversion be fitted neatly together? At what rate of operations can companies resume production of civilian articles? Will the manpower situation be tighter or easier? Will labor productivity be higher or lower? Will reconversion costs be included in settlements on contract terminations? Will inflationary forces be stronger or less strong in the reconversion period than they are now? These are questions which it is difficult to answer at present. In the last analysis most of the answers depend fundamentally on the way the war goes and on military strategy, for the size and makeup of war production and the size of the Armed Forces are crucial for nearly all these questions.

As far as the next few months are concerned it is plain that we are still in a dangerously inflationary situation. Any relaxation from strict standards of price control would jeopardize our ultimate success in stabilization as we go into what we all hope is the last round. It would be a disaster if the stabilization achievements of the past three years and a half, which have been so much more successful than those in World War I, were now nullified by premature relaxation. Ordinary prudence requires that there be no

*Continued on page 284*

# CONTRACT LAW UP-TO-DATE

A resume of some pertinent 1943 decisions  
of the higher courts illustrating current in-  
terpretations of important contract law

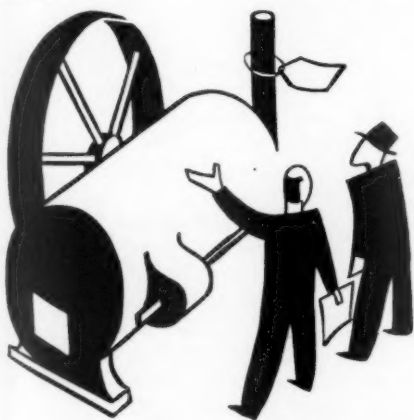
By LEO T. PARKER

**D**URING the year 1943 the higher courts rendered many interesting and informative decisions involving sales of merchandise. Several of these litigations are especially interesting to Purchasing Agents because very frequently these modern higher courts established new and important law.

Therefore, in this article we shall review 1943 higher court litigations involving contracts having special interest to Purchasing Agents and particularly in view of rendering assistance to avoid similar litigations, and to win unavoidable suits.

## Kinds of Guarantees

There are two classifications of guarantees: namely expressed and implied. An implied warranty exists where the buyer expressly, or by implication, makes known to the seller the particular purpose for which the goods are required, and also the buyer relies upon the skill and judgment of the seller to supply merchandise reasonably fit for such purpose.



However, no implied guarantee can arise if the seller has given an "expressed" verbal or written guarantee. Moreover, a purchaser cannot win the suit unless the testimony proves that no expressed guarantee was given by the seller.

For instance, in *Citizens Company v. Fairbanks, Morse and Company*, 168 S. W. (2d) 586, reported February, 1943, it was shown that a company sued a seller to recover damages on an implied guarantee in the sale of engine used in manufac-

turing ice. The counsel for the company argued that the seller of the engine was liable on an implied guarantee because the seller knew the purpose for which the engine was to be used, and the buyer relied upon the superior knowledge and judgment of the seller as to kind, nature and capacity of the engine.

However, since the testimony failed to prove whether the seller had or had not given an expressed guarantee, the higher court refused to hold the seller liable, and said:

"... Even though an implied warranty arises by operation of law, the court must have before it the facts and circumstances relating to the purchase agreement between the parties in order that it may be in position to determine whether such a warranty actually exists."

Also, see *Ace Engineering Company v. West Bend Malting Company*, 11 N. W. (2d) 627, reported December, 1943. In this case it was shown that a purchaser ordered two oil burners to replace coal furnaces theretofore used by the purchaser to heat and dry its malt products.

According to the evidence, the burners smoked, causing damage to the grain then being processed. This damage reduced the value of the grain from about three and one-half cents a pound to one cent a pound. The purchaser sued the manufacturer for damages. The higher court held the seller liable on an implied guarantee.

## Food Manufacturer Liable on Guarantee

Modern higher courts hold that there is an implied warranty to the consumer on the part of the manufacturer or processor of food or beverage, sold to a dealer, that such goods are fit for human consumption. However, in event a consumer or user is injured as a result of a mechanical defect in any product, such manufacturer is not liable unless the testimony proves that the injury resulted from negligence on the part of the manufacturer.

For illustration, in *Jax Beer Company, Inc., v. Schaeffer*, 173 S. W.

(2d) 285, it was shown that a consumer sued a manufacturer for injuries received when a bottled beverage exploded. However, since the injured consumer failed to prove that the bottle was defective or that the explosion resulted through negligence of the manufacturer, the higher court reversed the lower court which held the manufacturer liable. This court said:

"It is ordered that the judgment entered in favor of plaintiff (consumer) be reversed and judgment is here rendered in favor of the defendant."



Also, see *Geisness v. Bay Canning and Packing Company, Inc.*, 132 Pac. (2d) 740, reported January, 1943. In this case suit was filed against a canning company to recover damages for the wrongful death of a consumer claimed to have been caused from eating canned food.

In view of the testimony proving that soon after eating the food the consumer became sick, the lower court held the canning company liable in heavy damages. The company appealed to the higher court which reversed this verdict and, in holding the company not liable, said:

"The unwholesome character of food is not established, nor is a *prima facie* case made, merely by showing that the plaintiff became sick after eating it."

Therefore, in view of this modern higher court decision it is quite apparent that to hold the canning company or packer liable, it must be



shown that the food was unwholesome at the time the original can was opened, so that the possibility of contamination through some source not under the control of the company is excluded.

It is important to know, however, that some modern higher courts have held both the manufacturer and purchaser, who sold the product, liable in damages for injuries caused by defective machinery, impure or poisonous food, clothing, etc.



For example, in *Rogiers v. Gilchrist Company*, 45 N. E. (2d) 744, reported January, 1943, it was disclosed that a woman sued a seller for breach of an implied warranty of fitness of a dress. The woman proved that she bought the dress from a purchaser who had purchased it from the manufacturer. When she wore the dress her skin "broke out in a rash" under her armpits. She had never before had any skin trouble.

Her physician testified that the woman's condition was "a chemical dermatitis," and that in his opinion the dress caused it. A biological chemist testified that upon testing the dress he found that it had been improperly dyed in that the "dye intermediate," a toxic substance, had not been completely oxidized and that such a dress would cause toxic dermatitis wherever it came in contact with the skin.

In view of this testimony the higher court held the woman entitled to recover \$500 damages. This court said:

"No further statement of the evidence is required to demonstrate that a jury could have found the existence and breach of an implied warranty of the fitness of the dress for the purpose of being worn."

On the other hand, see *Payne v. R. H. White Company*, 49 N. E. (2d) 425, reported July, 1943. The facts of this case are that a woman bought and wore a dress and she suffered from burning, itching, blis-

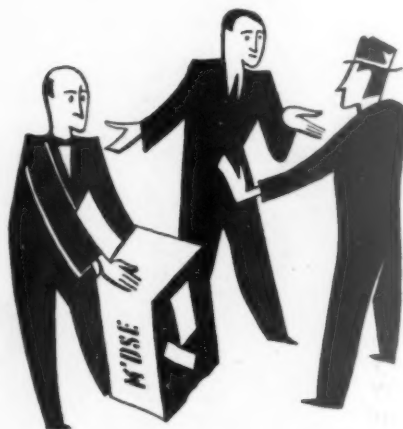
ters and swelling. She sued to recover damages, but the higher court refused to allow her any damages, and said:

"The plaintiff (woman) must show that the dress was unfit to be worn by a normal person, and cannot recover by merely showing that it was unfit for her or for some unusually susceptible person to wear."

Therefore, a seller may be held liable in damages where the testimony proves that he sold an article that effected injury to his customer, or any other normal person whose negligence did not contribute to the injury. Otherwise, no liability exists.

### Who Is Legal Agent?

A legal agent is any person authorized and admitted by an employer to act for the employer. And, also, a legal agent is one who acts for the employer who *accepts* the benefits of a transaction although later the employer denies that the employee was his agent.



For illustration, in *Miller v. Simons*, 173 S. W. (2nd) 182, reported July, 1943, it was shown that a man named Simons brought suit against Morris Miller to recover the purchase price for certain merchandise.

Miller defended the suit on the grounds that he did not receive the merchandise. However, Simons proved that he delivered the goods to a man, named Taylor, who acted as an employee for Miller. The higher court held Miller bound to pay for the merchandise, and said:

"It is well settled that Miller could not accept the benefits of the acts of Taylor, his agent, and deny liability therefor."

Therefore, where an employer accepts the benefits or profits from acts of an employee he cannot deny that such employee was his legal agent.

Modern higher courts hold that an "agency" may be proved by relevant although not direct testimony.

For example, in *Dunlap v. Shuler*, 141 Pac. (2d) 858, reported November, 1943, it was disclosed that a seller sued a buyer to recover \$525 for a water pump. The testimony showed that the purchaser contacted the seller and sought to purchase the water pump. The parties never agreed upon the price of the pump. Subsequent to the dealing between the buyer and the seller a man named Knight entered into a contract for the purchase of the pump in question for the sum of \$525. The buyer refused to accept delivery, contending that Knight was not his agent.

It is interesting to observe that the higher court held the buyer liable and said:

"Questions of agency and the scope of agent's authority may be proved by circumstantial evidence and are questions of fact for the jury."

Therefore, in litigations where either a buyer or seller refuses to assume responsibility for acts of an alleged agent, the jury will listen to the testimony and decide whether, in its opinion, such testimony indicates that a legal agency existed.

### Agent Personally Liable

Modern higher courts consistently hold that any and all persons who assume legal liabilities and responsibilities must fulfill their assumed obligations. This law is especially applicable to corporation officials, or Purchasing Agents, who personally guarantee to pay for merchandise.

For example, in *Redington v. McKay Hardware Company*, 141 Pac. (2d) 891, reported November, 1943, it was shown that a seller refused to credit certain merchandise to a company. In order to obtain delivery of the merchandise an officer of the corporation declared orally that the goods should be charged to him.

Later, when the company failed to pay for the goods, the seller sued the official personally. In holding the official liable the higher court said:

"The promise was original rather than collateral or of guaranty; hence, not within the statute."

Notwithstanding the decision rendered by the higher court in this case this official would not have been held liable if he had said: "Let the company have all the merchandise it needs. If the company does not pay, I will." In this case the official would have been a surety and the offer is void unless in writing. How-



ever, when the official said that he would personally pay the bills, he became liable on the verbal promise,

### **Liable for Acts of Agent**

No modern rule of law is better settled than: One who appoints another as his agent cannot escape liability for the agent's acts, in the future, unless he notifies third persons of the termination of the relationship.

For example, in *Baum v. Rice-Stix Dry Goods Company*, 157 S. W. (2d) 767, reported February, 1943, it was shown that a seller sued a man named Baum who had owned a store and who had previously purchased merchandise from the seller through his Purchasing Agent. The latter had no credit with the seller, who would not have extended credit to him personally.

Baum sold the assets of the store to the Purchasing Agent under a bill of sale. Later the agent purchased merchandise from the seller who, not knowing that Baum had sold his store, charged the account to Baum.



Baum refused to pay the account on the contention that he was not responsible for payment of merchandise which his former employee purchased after he sold the store. However, the higher court held Baum liable for full payment, and said:

"It is settled that the acts of an agent, after his authority has been revoked, bind a principal as against third persons, who, in the absence of notice of the revocation of the agent's authority, rely upon its continued existence."

### **Legal Fixtures**

Under conditional contracts of sale, or chattel mortgages, purchasers should be very careful that equipment is not attached to a building in a manner that its removal will damage the building.

For example, if a legal fixture is sold to a purchaser who owns a

building and the holder of a mortgage forecloses on the building, the new occupant of the building can prevent the seller from removing and repossessing the equipment. And the purchaser may automatically assume additional liabilities.

Of course, if the equipment or subject of sale is attached to the building in such a manner that the removal will not effect damage to the building this rule of law is not applicable.

For example, in *Supply Company v. Kaybe*, 24 Atl. (2d) 570, it was shown that a seller sold, under a conditional contract of sale, certain equipment to a lessee of a theatre building. The lessee of the building defaulted in payments. When the seller attempted to repossess the equipment the owner of the building objected on the grounds that the equipment was a legal fixture and could not be removed from his building. However, the higher court held in favor of the seller repossessing the equipment, and said:

"The trial judge must have found that the chattels in questions were not so affixed to realty as to become part thereof."

On the other hand, if equipment or merchandise is affixed to real property in such a manner that its removal will permanently damage the property, a new purchaser of the building; or one who holds or forecloses a mortgage on the building; or the lessee of the building may prevent its removal although the original purchaser authorizes the seller to take possession of the equipment, accessories, machinery, or other merchandise.

### **Processing Tax Suit**

Many higher courts have held that a purchaser who pays processing taxes to a seller cannot in any event recover back these taxes.

For example, in *International Milling Company v. Illinois Doughnut and Cake Company*, 50 N. E. (2d) 851, reported November, 1943, it was shown that a purchaser filed suit for \$2,735.16 representing the processing tax under the Agricultural Adjustment Act of 1933, 7 U. S. C. A.—601 et seq., on flour received and paid for by the purchaser before the act was declared unconstitutional on January 6.

It is important to know that the higher court refused to hold in favor of the purchaser, and said:

"It is not the province of the courts to add to contracts of parties, elements which they did not themselves provide, nor to protect one of the contracting parties against a sub-

sequent contingency, which would have been advantageous to him, had he but foreseen it."

### **Telephone Order**

Modern higher courts always endeavor to interpret the intended meaning of contracting parties when deciding a litigation involving a verbal contract. This law is applicable and necessary to verbal contracts or agreements made over the telephone, as well as other contracts.



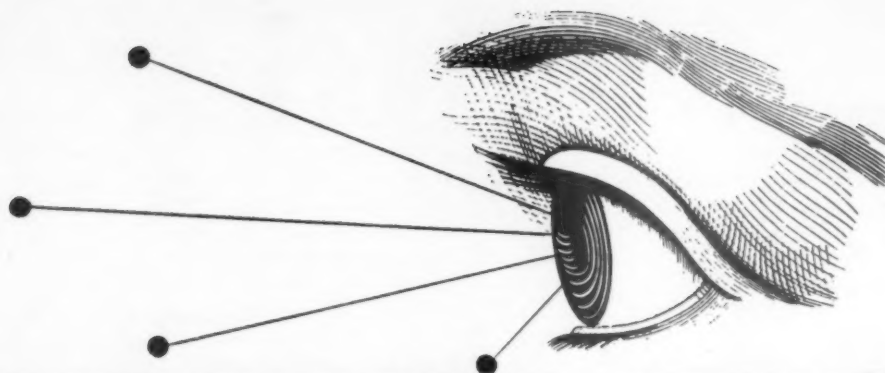
For instance, in *Scott v. Troop Water Heater Company*, 28 Atl. (2d) 922, reported January, 1943, it was disclosed that a seller advertised 100 water heaters "at a tremendous sacrifice." The seller offered the lot of 100 at \$10.00, half lot at \$12.50 each, and lots of 12 at \$15.00 each.

A purchaser, named Will, telephoned the seller to ship the 100 heaters, and to send one right away so that it could be tested. This heater was shipped to Will and billed to him at \$15.00, plus freight, and he paid the bill. When the heater arrived Will discovered that it was "used."

Will sued the seller for \$2,868 contending that he was damaged this much because the seller had failed to deliver new heaters as he had promised over the telephone. In refusing to hold the seller liable, the higher court said:

"It is somewhat remarkable that he would negotiate with Duerr (seller) for new heaters and have a price of \$15.00 fixed for them, when all testimony indicates that new ones were worth almost three times that price."

In other words this court decided in favor of the seller because it was extremely improbable that a seller would offer to sell standard merchandise at one-third its regular price, notwithstanding the testimony of the purchaser that new heaters were promised by the seller during the telephone conversation.



# THE PURCHASING VIEWPOINT

Purchasing executives lead discussion  
forum at annual meeting of N.S.M.P.A.

**A** PANEL of representative purchasing executives, discussing such pertinent topics as "The Kind of Selling We Like", "Mutual Cooperation", and "Post-War Buying Policies", under the general heading of "The Purchasing Agent's Viewpoint", was featured on the program of the annual meeting of the National Screw Machine Products Association, at the Waldorf-Astoria, New York, on January 28th. Participating in the program were Harry L. Erlicher, Vice President in Charge of Purchases, General Electric Company, Schenectady, N. Y.; C. N. Rhoutsong, Assistant General Purchasing Agent, Studebaker Corporation, South Bend, Ind.; and George P. Brockway, Purchasing Manager, American Optical Company, Southbridge, Mass. C. C. Shellburg, Director of Purchases for the Wright Aeronautical Corporation, Paterson, N. J., who was also scheduled to take part, was unable to be present at the meeting. John R. Cox, Vice President and General Manager of The Weatherhead Company, Cleveland, Ohio, a member of the Board of Directors of N.S.M.P.A., presided.

Opening the discussion, Mr. Erlicher spoke of precision manufacturing methods and close tolerances required in war work, and predicted that these requirements would be carried over into industrial practice after the war. This applies to screw machine products as well as to other operations, supplementing precision boring, honing, etc. He suggested that producers of screw machine products interest themselves in precision methods as one way of developing and holding post-war business, as purchasing men will be asking for this type of service.

He stressed the importance of sales contacts with the purchasing department, and emphasized the need for mutual understanding and cooperation as the basis for a satisfactory relationship between the buyer and seller. He described the ideal industrial salesman as one who is thoroughly familiar with his product and what it will do; who studies the requirements and operating conditions of the customer's plant, so that recommendations may be made in terms of the proposed ap-

plication and use; who conserves his own time and that of the Purchasing Agent in interviews, who will not promise more than he can deliver in the way of quality and service, but will make every effort to follow through on promises.

Mr. Erlicher declared that many salesmen err in calling on the Purchasing Agent too frequently, or not frequently enough. He suggested that they would do well to discuss this matter frankly with the buyer, and to arrive at a schedule that would best serve the purpose without waste of time on either side. For the buyer, he expressed a general willingness and cooperation in bringing together the salesman and technical or operating men whenever such contacts are desirable, but stressed the point that these contacts should be made through the purchasing department.

Mr. Rhoutsong spoke of the close scheduling required in meeting the accelerated production schedules of today, operating under governmental controls. Having placed the order, it is a responsibility of the purchasing department to find out what help the supplier needs in order to meet these schedules. Large-scale industry has been dealing with an increasing number of small suppliers and subcontractors, many of whom are not equipped by organization or experience to deal with all of the problems now being encountered, but the difficulties can be overcome with close cooperation between the buyer and the seller. He cited a number of cases from his own experience to illustrate this point.

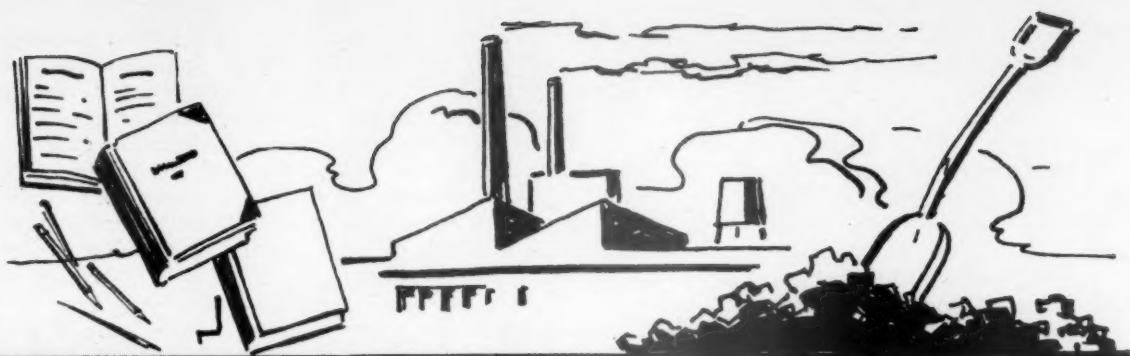
Speaking on "Post-War Buying Policies", Mr. Brockway first outlined the major factors affecting

*Continued on page 300*

George P. Brockway (top) and Harry L. Erlicher discuss post-war purchasing and sales policies at manufacturers' conference







# SPENDING AND SAVING



# THE PEOPLES MONEY

## III.—PLANNING AND APPOINTING THE PURCHASING AUTHORITY

By MARY E. O'CONNOR

**T**HE state is taken as the illustrative model for centralized government purchasing because under effective planning the state purchasing department would become the prototype for the counties, municipalities, and other political units within its borders. The very vastness of the Federal governmental field with respect to quantities of purchases, amounts of expenditures, and extent of territory, makes its purchasing structure inapplicable to smaller units which are less far-flung.

A plan of purchasing is proposed which is considered particularly adaptable to the needs of the states and of their smaller political subdivisions. Based primarily on the needs of government, it is sufficiently broad in character to be applicable to any unit of purchasing, with necessary adaptations to fit the scope of a particular project.

Technically, the plan provides for a *semi-centralized* purchasing system. A separate Department of Public Works is proposed, and there is

possible exclusion of some legislative purchasing. Centralization of order-placing, delivery, and payments, is not required, for 100% centralization is not effective, nor likely to be immediately possible, in the majority of the states. More complete centralization under favorable circumstances, however, is charted. In general, this plan follows modern principles of "big business". Many of its features have been taken from existing statutes, and much of it is actually in practice in government or in commercial purchasing.

### Localizing Purchase Authority

Opinions differ as to exactly where the purchasing authority should be lodged within a state government. The ideal solution seems to be the establishment of a Division of Standards and Purchase in the Executive Department. Since sound arguments are advanced in support of other arrangements, however, they are entitled to thoughtful consideration.

One debatable suggestion is to

make centralized purchasing a function of an existing major branch of government, such as a State Department of Taxation. Such an arrangement might introduce a bias, even though unintentional. Since one of the largest units of government would be doing the purchasing, insufficient consideration might be given to the needs of other agencies.

Sometimes it is asserted that the bodies appropriating or apportioning money for governmental expenditures should control the awarding of contracts. Here, too, the objection seems clear. Budget-making entails such a vast amount of power and influence that it is desirable to avoid the possibility of abuse that might result from a combination of functions.

A third proposal, that a State Auditing Department should be the authorized purchasing agency, may be dismissed summarily, for this department would then be in the position of authenticating its own purchasing accounts. Since purchasing



is an administrative function, such a procedure is subversive of the very principles of auditing.

The most acceptable of these counter-proposals is that which advocates the establishment of an independent State Department of Purchase. This proposal merits deliberate study, since the dominant intent in regard to centralized purchase is to make it a major function of government, impartial and fair to all, and subservient to no particular group or interests. While purchasing is a secondary function in the sense that it is administrative, regulatory and non-productive, it assumes primary character in that there can be no government administration, maintenance or production without it. However, the principal difficulty with the plan for an independent department is the cost of operation and the fact that adequate state appropriations are not always forthcoming. Moreover, the function of centralized purchase involves the exercise of supervisory powers, sometimes unwelcome to government agencies subject to such jurisdiction. This power, if abused, could defeat the objectives of centralized purchasing.

#### Curbs Are Needed

How could arbitrary tendencies of the administrator be curbed without handicapping the performance of official duties, if the purchasing authority were lodged in an independent department? One device would be a salaried, full-time commission of government and business experts authorized to review all acts and contracts. Obviously, the cost of such a commission would be beyond the means of the average state purchasing budget and cannot be considered practical. A modification of the above device would be a commission of *ex-officio* membership. But since state officials already have full-time jobs, their services would necessarily be secondary to their regular duties. Moreover, a large and unwieldy body would be needed to assure a balanced representation. Additional objections are that the system would be expensive and the transactions of the commission would necessarily be retarded when its members were busy elsewhere. The only people actively interested in the details would be those actually engaged in purchasing work, yet commission membership by proxy might be equally unsatisfactory. Conscientious officials saddled with the obligation of membership could, of course, be depended upon to cooperate, but only in so far as they

could spare time from their regular duties.

The *ex-officio* plan of centralized purchasing has been tried, and the records are filled with the complaints of institutional managers who did not wish their superintendents to serve, and of superintendents who resented having their stewards called away from regular duties to attend meetings of the purchasing committees. Criticism has also been expressed of long-distance telephone charges and traveling expenses assessed against their agencies for purchasing committee business.

#### An Executive Division

The debate between the advocates of autonomy and the supporters of subserviency in locating the purchasing authority pivots, as has been seen, on the question of how to restrain autocratic tendencies on the part of the purchasing officer. The ideal solution, therefore, would seem to lie in the establishment of a Division of Standards and Purchase in the Executive Department. This places the function directly within the purview of the Governor, and, since he is constitutionally responsible to the people, the administration of the purchase division becomes closely responsible to public opinion.

Under this arrangement, the purchasing authority is comparatively free from outside influence and interference, and the rulings of the officer in charge have greater force and effect. Needless to say, the Governor, as chief executive, should not surrender the right to pass on matters of controversy, especially those relating to arbitrary use of power by the purchasing division or its executive officer. Similarly, the heads of institutions and fiscal departments should retain their authority to determine and recommend in matters essential to the well-being of their charges, with complete right of executive review. In addition, the right of appeal should be open to any person or unit—taxpayer, government, or business—having official dealings with the purchase division.

The foregoing plan will not impose unfair burdens upon the chief executive. The Governor is bothered little if the purchasing officer is competent; if not, this official should be replaced in the interests of good government. Because of spirit of fair play which generally exists in the business world and in government service, there is infrequent cause for grievances in a well-managed purchasing unit. Only rarely is it necessary for the Governor to decide an issue.

Since the purchasing officer always should substitute cooperation for authority in the discharge of his duties, general meetings of interested parties should be called; standing or temporary committees of government officers and employees, producers or other interested parties, should be appointed to cooperate in matters of standardization and purchase. Every agency of the government, individually and collectively, should be invited to submit recommendations. The purchasing officer and his representatives should visit state agencies, make known their objectives, and profit by criticism and advice. The absence of statutory authority for formal advisers increases the responsibility of the purchasing officer for this voluntary cooperation.

#### Appointing the Purchase Authority

Having localized the purchasing authority and determined upon a division head as the executive officer, it is now necessary to give legal status to the recommendations. The position of state purchasing officer will be filled by gubernatorial appointment. Rightfully, this officer should be a civil service employee, appointed on the basis of merit and qualifications for the position. Civil service appointment, however, is the exception rather than the rule.

There has been much discussion as to what constitutes an appropriate title for the executive purchasing officer, because of his varied duties. He has sometimes been called a Business Manager or a Purchasing Agent. Business Manager is hardly an appropriate title if there are no budgetary and accounting duties. Although the title of Purchasing Agent is established in law because of long usage, acceptance, and legal interpretation, it is hardly descriptive of the scope and responsibility of the government centralized purchasing authority. The most appropriate title is probably Superintendent or Commissioner of Standards and Purchase. In this discussion, the term "the purchasing officer" is used as the designation. Assistants and those who represent individual state and local agencies in matters of purchase are called "the purchasing agents".

Ideally, the term of office of the state purchasing officer should be indeterminate and he should be subject to removal only for due cause. In practice, as a matter of general political policy, the term is more often coincidental with that of the Governor or political party in power. This is unfortunate, since continuity of policy and experience is of obvi-

ous advantage; efficiency is promoted through a feeling of security on the part of the official, and public confidence in officials is built up through their efficiency. While long terms of office sometimes serve to cover up malfeasance, this is not apt to be the case in government purchasing, where action is subject to executive review and public scrutiny.

### The Purchasing Officer

Government purchasing is a responsible undertaking, even in its minutest details, and successful administration requires a background of training and experience. Though experience can be acquired by errors made and not repeated, this approach is too costly, and the knowledge gained is not perpetuated through the training of personnel.

The person best qualified to organize and develop a government purchasing office is one with experience in similar work, either for government or business. He can adapt his ideas from the one to the other or, better still, coordinate them with those of assistants who have had complementary training.

A government purchasing officer should be qualified for the position by much more than education and experience. He should be a cultured, two-fisted individual of integrity and common sense; a scholar familiar with precedent, history, and the social problems of government; a man who is respectful of law and who understands the rights, duties, and limitations of his official status. He must be sufficiently experienced in business and business economy to blend reason, humanity and initiative in establishing a practical and scientific technique. He should be able to assimilate and dissect information, to convert theory into practice, or to throw it to the four winds as occasion demands.

Government purchasing officers must be decent and courteous; their jobs depend on it. They are catering to an independent aggregation of state agencies which expect to be serviced or "know the reason why"; dealing with a group of citizens who wish to transact business with the government, and rightfully demand reasonable treatment and consideration; and finally, they are concerned with public opinion, which is ever ready and eager to turn the white light of publicity on incompetent or corrupt officials.

A government purchasing officer should be free from political debts, and he should have no "silent partners". He must divorce himself from other work-a-day activities in

order to give his entire time to his task. He may have three days work to do on each official day of the week—six hours to be spent in interviewing the clients and salesmen, six hours for incoming and outgoing mail and the related conferences, and six hours for staff administration, staff interviews, and conducting bid openings. He must crowd all of these duties into one day, unless he is fortunate enough to have trustworthy assistants fully competent to share the responsibility.

In a new endeavor he will proceed slowly, to avoid rocks and reefs in an uncharted sea. In an established organization, if he is cautious, he will concentrate authority in tried officers of his division, known for their honesty and competency in discriminating between fallacies and facts. They will steer on an even keel until he is ready to take over. He will, however, take active charge of the work as soon as he is familiar with it, since the responsibility must be his. The public is averse to having members of the staff singled out and disciplined for policies and practices established by their superiors. While the law does not hold an executive responsible for all of the acts of his agents, he is exonerated only in so far as he has diligently striven to make proper appointments, and in so far as he can prove that dereliction is not the result of his own orders, willful ignorance, inefficiency, absence from duty, carelessness or dishonesty.

### Discretionary Powers

Conversely, the responsible official must not be handicapped by statute any more than is consistent with the protection of public interests. The purchasing officer gives full time to his duties, he is directly responsible for performance, he is pledged to cooperation, he is curbed by a statute providing for executive review of his acts. Further restraint is unnecessary. He must be permitted discretion to discharge his duties. But discretionary power does not transcend the law. It is a duty rather than a right.

In public office, the grant of discretionary power is perhaps the most important necessity and at the same time the outstanding danger to public interests. The danger can never be wholly obviated, since discretionary power is absolutely essential to public administration, just as it is to any commercial business. A public officer must have the right, within the law, to act according to his best judgment in any unusual

circumstances. Having exercised this prerogative, he is entitled to the backing of his constituents. But every argument advanced for the grant of discretionary power can be construed to make of it arbitrary power. While a public officer may even be able to uphold a decision in court because he is invested with the power to make it, the legal verdict will not whitewash an unethical lack of principle or judgment involved in the injudicious use of power.

Discretion dictates, therefore, that the decisions of a government purchasing officer must be made within the limits of his legal authority and in the best interests of the citizenry which he represents. The theory of public service must not be utilized to open the door to usurpation of powers, through interference in matters beyond his jurisdiction. Likewise, his power should not be used as a lever for enforcing social or labor legislation or for catering to other pressure lobbies. Even slight deviation from rigid principle is likely to involve him in difficulties; one concession leads to another, and there is no half-way mark on the highway of special interests.

### "Stepchild" of Government

So much for the responsibilities of the purchasing officer; his blessings are few. He may well be called the "stepchild" of government since, because of his powers, he is not always a welcome member of the administrative family. He must be sentient to public opinion but immune to malicious criticism. He will need a sense of humor as a safety valve, since his acts may become the excuse for any and every failure in a state agency that can be even remotely linked with purchasing. If the hens do not lay eggs, it is, of course, because the wrong feed was bought; if the tomatoes spoil, the fault is in the cans; if the power plant does not function properly, whatever its inadequacies, the inefficiency is in the coal selected by the purchase division. The realistic purchasing agent will recognize, naturally, that being the "goat" is a part of his job.

Sometimes he may be tempted to go too far in trying to win favor, but he must learn that creating good will and buying it are antipathetic techniques. The buyer who tries to ingratiate himself with the seller and consumer by special consideration and favoritism, or to curry favor with the public by being a price-buyer, brands himself as incompetent.



"We love him for the enemies he has made," was a slogan used in the campaign that first sent Grover Cleveland to the White House. The purchasing officer should be encouraged by that slogan, and should keep in mind as well the statement of Chief Justice Oliver Wendell Holmes: "The man who, by his own efforts, without fear or favor, climbs the political ladder to a responsible position in government service deserves commendation, though more often he is disliked like Satan himself."

Fortunately, respect rather than popularity is a true index to efficiency and integrity. And the honorable, impartial purchasing officer is bound to be respected.

### Staff Organization

No industrial, scientific, or government project can be brought to completion promptly or successfully unless an efficient staff functions to standardize, purchase, inspect, stock, care for, and distribute the necessary commodities. Hence, it is natural to expect that the Division of Standards and Purchase will be fully staffed. Unfortunately, legislators do not always appreciate that adequate appropriations for efficient purchasing departments are an excellent investment, and that competent personnel will save many times the total of their salaries.

A government purchasing agent usually has too much detail to supervise. Between his preoccupation with office work and the fear of public criticism of expenditures, he is tied too closely to his desk. He should, of course, preside at his own bid openings, and spend at least ten days of each quarter-year inspecting and investigating among state agencies and the trade, utilizing these contacts to help him evaluate his specifications and the effectiveness of the products he buys.

But he should also attend meetings of other purchasing agents, visit trade exhibits, and exchange experiences with persons engaged in the production, manufacture and use of like commodities. The government buyer should keep himself informed of modern business practices as they relate to his field of standards and purchase, to supplement his particular line of experience. If he knows how a product is made and used, and what it looks like, he can determine more readily whether it is the right one for a particular purpose. In his contacts with the trade, he should be at least as well equipped as the salesman with whom he is matching intelligence. With

the knowledge he accumulates, he will be more competent to serve his customers, to direct and guide the personnel of his bureau, and to evaluate the inspection and test reports that come to his attention.

### Director of Standards

In gaining familiarity with materials, the purchasing agent is not going afieid from his proper province and interfering with "standards"; he is a part of "standards." The myopic viewpoint that a purchasing agent must close his eyes to information lest he infringe on the jurisdiction of the bureau of standards is inefficient. In a small organization, each purchasing agent may have to write specifications—subject, of course, to approval by the Director of Standards—whatever administrative routine may have to say to the contrary. A survey would in all probability indicate that, in state and local government purchasing, the standards bureau is understaffed even more than purchasing, and that only through exchange of services between the two functions can a bottleneck in standardization be avoided.

The Director of Standards by preference, should be a graduate engineer, qualified by diverse experience to act as state adviser on technical and mechanical operations within the purview of the Division of Standards and Purchase. His problem is unique to the extent that in the engineering field his technical specifications may require repeated amendment and rewriting to meet individual needs, as against the usual theory that standardization, once effected, has quasi-permanent features. In an understaffed department, he will actually take over some of the work of purchasing agents in the technical field, just as the reverse procedure has been advocated in the previous paragraph.

### Specialists

**Economist.** The larger state purchasing departments should employ an economist, and the results of his studies and research should be made available to the smaller political purchasing units in the state, as well as to all state departments.

**Storekeepers and Accountants.** The physical handling, receiving, housing and distribution of merchandise under plans of centralized storage are matters of first importance. The statistical records of the division, including all requirement lists, stock and inventory records, and the accounting for merchandise, require scientific methods and responsible handling.

**Traffic.** The traffic expert will be able to effect material savings in routing the transportation of purchases. The volume of purchases, particularly of those made f.o.b. shipping point, will determine the necessity for such a position. In any sizable purchasing department, the service will more than pay for itself.

**Commodity Specialists.** The huge expenditures which every state makes for various commodities justifies the employment of full-time commodity specialists in major lines. If such positions are not otherwise provided for, the services of expert technical inspectors should be made available, for advice in standardization and purchase as well as for inspection.

**Industrial and Agricultural Advisers.** The industrial operations of state institutions, where they involve matters of production, inventory control, pricing, and sales, should be under the direction of an industrial adviser on the staff of the purchase division, with such assistants as may prove necessary. It is frequently possible, and sometimes more efficient, to handle agricultural problems of this nature cooperatively between the purchase department and the state department of agriculture or the State College of Agriculture, rather than by a special appointee on the purchasing staff. Agricultural representation in the purchase division could be limited to buyers, inspectors, and a competent field representative to correlate production and supervise the transfer of stock and commodities between state agencies.

**Engineers.** Every purchasing division should have available the services of at least one combustion engineer, thoroughly familiar with boiler plants and their operation, and with fuels and their adaptability to different types of equipment.

The staff should also include one or more construction engineers, depending on the type and volume of state maintenance, repair and construction work under purchase jurisdiction, and of purchases for federal-state public works projects.

The purchase of electrical and mechanical equipment, and of automotive equipment requires other competent experts.

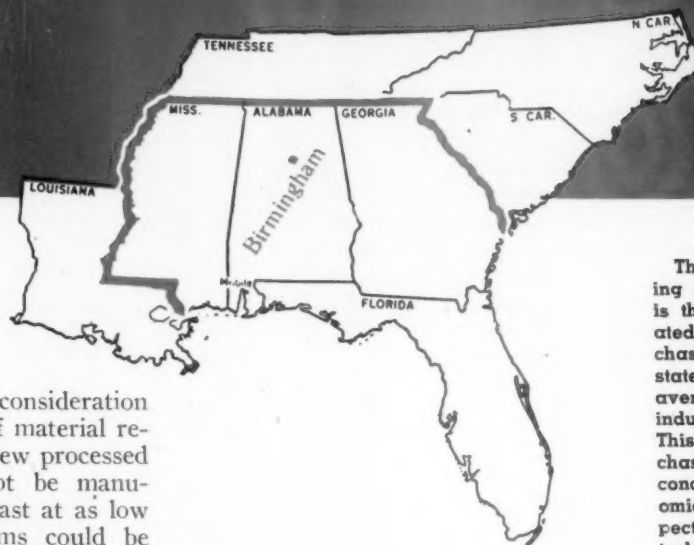
The purchase of laundry machinery, incinerating, sewage disposal, water purification and water softening plants, involves engineering problems that must be solved by specialists—with the cooperation of the health authorities, if necessary.

In many other fields there is also

(Continued on page 302)



# POST-WAR POTENTIALS



**T**AKING into consideration only availability of material requirements, there are few processed items which could not be manufactured in the Southeast at as low cost as the same items could be manufactured in other sections.

Many factors which influence location of manufacture of assembled items, such as machine tools, automotive equipment, electrical equipment and other assembled items, must be considered individually with respect to the item to be manufactured to arrive at any con-

clusion as to logical location of manufacture. This report will not generally deal with analyses relating to the prospects for manufacture of such assembled items in the Southeast, as it is not practical for the organization to analyze the prospects for the manufacture of many hun-

The Birmingham Association of Purchasing Agents, with about seventy members, is the only organized buying group affiliated with the National Association of Purchasing Agents in the four Southeastern states—representing less than 20% of the average number of members in Northern industrial areas of comparable population. This is significant because "Central purchasing departments usually give more concentrated study to purchasing economies involved in closely located prospective sources of supply. Likewise central purchasing departments afford better facilities to home sellers to offer their products for sale."

Together with the adjacent states of North Carolina, South Carolina, Tennessee, Louisiana, and the eastern section of Texas, this is a compact market area with a population of 27,000,000 people.



## OCCASION OF THIS REPORT

On September 23, 1943, Mr. Thomas W. Martin, Regional Vice Chairman, Committee for Economic Development, addressed the Purchasing Agents Association of Birmingham relative to the economic position of the Southeast. He stressed the necessity that this section process more of its material requirements, and improve its position with respect to processing materials for other sections in balance for materials processed in other sections for use and consumption in this section. If a standard of living comparable to other sections is to be maintained, and if employment is to be provided in this section for the armed personnel and personnel released from war production employment in peacetime activities, this must be done.

In the discussion that followed, there was expressed the opinion that the members of the Association are in particularly good position to furnish certain information as to why the industrial and institutional establishments of

the Southeast have not purchased processed products of the Southeast to a greater extent, the prospects for increased purchases of Southeastern products, and information as to items which might be manufactured or increasingly manufactured in the Southeast on an economically sound basis. Such information would be of considerable value to those organizations endeavoring to improve the economic position of this section through increased processing industries.

A resolution was passed that the members of the Purchasing Agents Association of Birmingham would conduct a study to accumulate such information as might be of value to the interested organizations and make the information available to the Committee for Economic Development, the Alabama State Chamber of Commerce, the Associated Industries of Alabama, the Alabama State Planning Board and other interested organizations.

## THE PURCHASING AGENT AND POST-WAR PLANNING

This report of the Post-War Planning Committee of the Birmingham Association of Purchasing Agents has a deep significance in illustrating the part which purchasing executives can contribute in meeting a problem that is now engaging the attention of all industry. It is based on the sound premise that buyers make markets. Purchasing Agents are in a better position than any other group to give authoritative answers to the basic questions of why buyers buy what they buy, and where they buy. Industrial planning in general, and post-war planning in particular, must be built on that information.

The report is an outstanding achievement on its own merits, and a valuable contribution to the economic development of an important area of our national life, one of America's last industrial frontiers. It may be of even greater importance in indicating a pattern and a viewpoint to be considered in other studies of this nature, where the element of sectional interest is less pronounced. That viewpoint is commended to all who have a responsibility for industrial planning, and to other purchasing associations seeking a constructive project in the service of all industry.

dreds of such items individually. In the general elimination of inclusion in this report of the prospects for manufacture in the Southeast of such assembled items which do not lend themselves readily to group treatment, The Committee by no means wishes to convey the impression that it considers that such items should not be sought for manufacture in this section. As a matter of fact, the concentration of the manufacture of such assembled items in other sections of the country has led to the establishment of contributory industries and the accumulation of trained manufacturing personnel in the vicinity of the assembling plants.

Another field which is not generally treated in this report, for the same reasons, is the manufacture of replacement parts for assembled products. More and more in the field of automotive equipment, machine tools, electrical equipment and other assembled items, replacement parts are being produced by manufacturers independent of the original equipment manufacturers, particularly in the cases where patents on the original equipment have expired.

This report does not fully cover retail items which are not generally used by industries and institutions, inasmuch as our membership is composed of industrial buyers, institutional buyers and buyers for firms which largely serve industry and institutions.

While the members of our Asso-

ciation who have participated in the preparation of this report are all affiliated with Alabama business establishments and institutions and the trade areas of many of these business establishments and institutions are principally in Alabama, the part of this report which relates to study of market prospects generally considers a larger field.

Due to the thousands of items which are not now manufactured in the Southeast and which might be manufactured in this section without economic disadvantage as to material requirements, it was considered that better and more thorough results in the survey might be accomplished by subdividing the market study principally as to materials used in the manufacture. The Committee accordingly asked and Group Committees of our Association were appointed to study and report to our Postwar Planning Committee status of manufacturing in this section and prospective markets under the following classifications:

1. Products made of Steel Mill Items.
2. Products made of Iron.
3. Textiles and Textile Products.
4. Forest Products.
5. Ceramics.
6. Agricultural and Dairy Products.
7. Paper Products and Stationery Items.
8. Chemicals.

9. Brass, Copper and Aluminum Products.
10. Resale Items.

### Why Purchases Are Made from Other Sections

The Committee considers the principal reasons that Southeastern industrial and institutional buyers do not purchase a greater proportion of their respective requirements directly or indirectly from Southeastern manufacturers are as follows:

1. Products of this section simply have not been found available to meet the requirements.
2. In some instances where products of this section are available, the buyer is confronted with the problem of selecting an established product of another section, supported by reputation, experience, and financial backing, or an unproved product of this section and of questionable reliability and/or financial backing.
3. In other instances products of other sections are selected due to better presentation and salesmanship.

### The Underlying Problem

As to availability and acceptance, The Committee considers it appropriate to outline certain factors not confined to any specific group, which are considered to have contributed to the present deficiency of the Southeast in manufacturing, and to outline certain factors not confined to any specific group which are considered favorable to accomplishing improvement in the future of the position of the Southeast as to manufactured products.

The following are some of the factors which are considered to have influenced the scarcity and lack of acceptance of manufactured products of the Southeast:

1. During the early developments of manufacturing for market in this country, the economy of this section, which was built around large plantations, with slave labor, was such that our citizenship was not generally interested in the development

## POST-WAR PLANNING COMMITTEE

Birmingham P.A.A.

G. H. Cole, Chairman

H. E. Cross

W. C. Screws

L. C. Teague

H. A. Wilson

L. C. Wilson



of manufacturing for market. The manufacturers of other sections who began manufacturing earlier have had advantageous position over later established manufacturing plants or prospective manufacturing plants of this section; for reasons included in the following factors.

2. A greater proportion of the populace of the Southeast has been able to live on agricultural production and less incentive has existed for the promotion of manufacturing industries.

3. The greater density of population in other sections has established a better nearby market for manufactured products.

4. The earlier development of cumulative manufacturing has been progressive. Many of the manufacturers have acquired experience and established reputations which enabled them to create demand and expand markets into other sections. The establishment of manufacturing enterprises earlier in other sections has tended to train and accumulate trained personnel in those sections. Such trained personnel has contributed to expansion of existing enterprises and the creation of new enterprises in those sections. The early establishment of manufacture of assembled items in certain sections has drawn the manufacture of contributory items to the same sections. Manufacturers of assembled items have made available to purchasers engineering services on items related to the assembly, so that the related items are sometimes furnished or specified by the manufacturer in connection with the assembly.

5. Patent protections have to a large extent frozen the manufacture of certain items in the sections of early manufacture.

6. Assembly line and other mass production techniques have reduced costs of manufacturers in other sections to the extent that prospective manufacturers of the Southeast are not in position to compete, even in the immediate vicinity, unless the prospective market is expanded to permit mass manufacture. The high cost of facilities for mass manufacture increases the difficulties of financing the new manufacturer.

7. A larger proportion of population in other sections has been technically educated, and educational institutions in other sections have emphasized more the preparation of personnel for responsible positions in manufacturing enterprises.

8. Many manufacturing plants of this section are branches of business establishments headquartered in other sections and efforts to expand

output of the branch plant are sometimes limited to territories which are better served by the branch plants. The location of sales and engineering headquarters at the principal plant is an influence favoring the principal plant over the branch plant.

9. Purchasing and engineering functions of some of the business establishments are handled or controlled by headquarters in other sections and this results in purchase of a greater proportion of requirements in the interest of the headquarters.

10. National zone and destination pricing policies observed by many industries tend to favor national distribution policies of existing large industries and tend to discourage development of local competitive manufacture.

11. National advertising of many large manufacturers creates preference and demand for their products in the Southeast. Manufacturers in this section are generally too small to support such advertising.

12. Many items used by industries and institutions in the Southeast are marketed through wholesalers. The wholesalers of many of such items find better demand for products of other sections with recognized reputations and supported by national advertising over comparatively unknown products of the Southeast and accordingly handle the products of other sections.

13. Perhaps selling has not been as generally emphasized and developed as may have been justified by prospective markets.

14. Buying for business establishments of the Southeast is considered to be not generally as well developed and organized as in more concentrated sections. As an illustration, the Purchasing Agents Association of Birmingham is the only affiliate of the National Association of Purchasing Agents, the representative organization of industrial and institutional buying, in the states of Alabama, Florida, Georgia and Mississippi. There are approximately 70 buyers in the four states who hold membership in the National Association of Purchasing Agents whereas there are 7400 members of the Association, so that the membership in these states is less than 20% of the average number of members in industrial sections of the North with the same population. Organized buying or central purchasing departments usually give more concentrated study to purchasing economies involved in closely located prospective sources of supply. Likewise central purchasing departments afford better facilities to home sellers

to offer their products for sale.

### Favorable Factors

Factors which are considered favorable to expansion of production of manufactured products in this section include:

1. More favorable climatic conditions, particularly in partially outdoor industries, such as shipbuilding and aircraft manufacture.

2. Ample labor supply.

3. Adequate raw materials and power.

4. Large population of immediate area in which manufacturing is under-developed. According to the 1940 census, 27,000,000 people are included in North Carolina, South Carolina, Georgia, Florida, Tennessee, Alabama, Mississippi, Louisiana and the eastern section of Texas. This area can be reached from almost any point within the area overnight by truck or train.

5. More attention by higher educational institutions and various organizations to the problems of accomplishing more processing of natural resources of this section and better equipping our personnel to attain such aims.

6. A better supply of skilled personnel has been accomplished through local educational efforts and war production experience.

7. Better acceptance of certain products manufactured in the Southeast.

8. Rapid transportation developments have reduced advantages of other sections as to availability of skilled personnel and material requirements.

9. There has developed a trend in some industries that firms that maintain a wide distribution of their products are reducing the concentration of manufacturing through establishment of branch plants. The Southeast is in good position to obtain location of many such branch plants in view of heavy consumption or use of the products in this section. The development of output of such branch plants is often more rapid than development of output of new plants, as they bring reputations and patent protections with them.

In the foregoing statements of factors which are considered to have influenced the scarcity of items manufactured in this section available to industrial and utility buyers and the factors which are considered to favor accomplishing in the future increased manufacturing in this section, no criticism is intended of any group or individual which may be involved in the factors. This report



is intended to set forth facts as they appear to the composite viewpoint of The Committee and those consulted, and condemnation or approval of marketing policies are not considered within our scope. Consideration should be given that this report represents principally viewpoint of industrial and institutional buyers and other factors are involved from the viewpoint of an investor in business enterprise in the Southeast.

### Steel Mill Items

The Steel Products Committee gave considerable thought to compiling a list of items that could be economically manufactured in the South from steel now being currently produced in the South.

Any large hardware catalog or buyer's guide readily suggests thousands of such items that are currently and commonly sold throughout the South, yet are manufactured as a rule in other sections. From this wide variety, the Committee selected 99 representative products for which there seems to be a sufficient volume of demand within the section to justify their manufacture, either as adjuncts to present facilities or by installation of new plants, and distribution in the South. With few exceptions, these articles are not now manufactured in the South, or the volume does not begin to approximate the consumption. In some cases, the present products are not of a quality that is comparable to modern standards.

### Iron Products

Thirty-two specific items were listed, made partially or wholly from iron. There are in the Southeast numerous foundries and facilities for manufacturing such products. However, in many cases the product is made to blueprint specifications and represents a special job. Hence the buyer often finds it advantageous to purchase from a Northern or Eastern source of supply that has developed a sale for a large production of the particular class of material and can sell it to greater economical advantage than the single-job Southern foundry. It is the opinion of the Committee that production of many of the items now made on a job basis could be enlarged to a point where the item ceases to be a special order. The expansion of facilities to take care of increased production in many instances will so reduce the cost that it will be equally as economical to purchase such an item in the Southeast.

There is also a wide field for ex-

pansion of this market by the development of improved and tougher qualities of iron by the addition of nickel, chrome, manganese, etc. Such improvements in quality would regain markets where stronger materials have in some cases been substituted. Continued research in this direction is recommended.

### Textile Products

The Committee finds that following World War I there was a shift to the South, and especially to the Southeastern states, in the textile industry. Many of the fine old New England mills built new plants here. As illustration, Pepperell Mfg. Co. has a fine mill at Opelika, the Indian-head Mills at Cordova, Pacific Mills at Lyman, S. C., etc. Such mills have added much to the prestige of the Southeastern area, and we are of the opinion that every effort should be made in the postwar period to maintain the production of these mills and through the other mills already here. The Southeast already produces the finest cotton towels made in the world. North Georgia is the cotton chenille bedspread center of the world. Alabama produces 36" unbleached sheetings that bring a premium over similar goods produced elsewhere. New machinery could be added to produce the new lines needed in this section. One specific suggestion is that an oilcloth plant could be located to advantage in Alabama. A great deal of this product is used in the South. It is made on a sheeting base, and most of the other materials going into the product are obtainable in the Southeastern states.

### Chemicals

Most of the large volume basic chemical items used by industries in this section are produced in the Southeast. It is the consensus that the manufacture of any one chemical by a concern would not pay, but that a variety of items would have to be produced. It is suggested that something new, the result of research, might be the means of further development of the industry in this section.

Recommended products include paints, soaps and cleaning compounds, soda ash and caustic soda, insecticides and fungicides, fertilizers, synthetic products from Alabama coals, plastics — including molding and fabrication (a phenol plant is already operating at Tuscaloosa, providing one of the principal raw materials), paper mill by-products (lignin, sugars, etc.),

specialties — including cosmetics, perfume, shoe polishes, vitamins, synthetic drugs. Many of these products are now purchased from other sections, and the problem is one of marketing as well as of production.

To be avoided are rubber and magnesium industries, because of anticipated surplus capacity after the war, and industrial alcohol from waste wood, which is regarded as an uneconomical undertaking in this country.

### Brass, Copper and Aluminum Products

The aluminum industry in the Southeast antedates the war and has been greatly expanded in the present emergency. One of the first efforts should be to insure the continued operation of these facilities in the postwar period. One fabricating plant making airplane wing sections from aluminum shapes and plates is now located in Birmingham and plans to continue after the war. The area could probably support a plant for the stamping and manufacture of household and commercial aluminum appliances.

The potential market for copper products seems to be confined to wire and tubing, and the economic justification for the installation of a wire and/or tube mill with its attendant rolling facilities seems doubtful. However, wire drawing facilities do exist in the area, and it is suggested that it may be feasible to incorporate the drawing of copper products into the same operation already developed for steel products.

Brass foundries in this territory manufacture a very limited line of products. Expansion of these industries and a greater diversification of products seem to offer good postwar opportunities. Brass products for water works and sewage systems, including couplings, curb and corporation stops, goosenecks and service clamps, are now purchased from outside sources in considerable volume, and a great development of sewage disposal plants is expected after the war. This market is now being surveyed with a view to the possibility of local manufacture. Deep drawing of brass products for military use has been introduced in the South for the first time, and should be investigated as to the possibility of continuance in domestic applications.

One of the most serious problems has been the difficulty of securing or

training skilled personnel for such technical industries. The success of factory training methods in war industries, and in trade schools established by the government has done much to dispel this idea. Newly aroused social consciousness, more and better educational and living facilities, should also make it easier to persuade skilled workers from the East and North to move with their families into this territory.

### Resale Items

Since these items are not so directly within the scope of experience and specialized knowledge of industrial purchasing men, the data in this product classification is not so complete as in the preceding sections. However, a list of 27 suggested product lines was compiled, for which markets and raw materials are available in the territory. For several of these products, there is limited production capacity now available. Expansion of these facilities, and relatively simple conversion of others, is regarded as practicable.

### Forest Products

The uses of our main wood—pine—have been expanded about as far as the nature of the wood itself permits. It is believed, therefore, that the use of pine as lumber will be broadened by new processes and refinements rather than as new products. One of these developments that is certain to be used extensively in postwar years is lamination. This will enable pine to be used in the construction of boats, pontoons, floats, paddles, agricultural implements, and on up through light frame structures such as prefabricated houses. Development of wood preservatives and seasoners, compregnated wood, and fireproofing, will improve the possibility of using pine in many manufactured items.

It appears from this study that the largest field for the development of forest products industries in the South lies in the other woods. In Alabama alone, the following woods are native in varying quantities: ash, basswood, beech, boxwood, cottonwood, cypress, elm, gum, hickory, magnolia, oak, poplar, sycamore, tupelo and walnut. These woods can be processed into thin veneers glued to Southern cotton cloth. Most of them are particularly well adapted for interior decorative paneling because of the unusual grain formations, and there are other commercial applications as well. Because of the thinness of the veneer, the

square foot yield from the log is large, and the profit opportunities are greater than in the more common bulk products.

Intelligent reforestation and selective cutting are needed. The pulpwood industry is of comparatively recent development, and should advance with the aid of research in connection with the paper industry. Scientific research will also result in the large production in the South of stock feed, sugar, alcohol and other products made principally from the 50% of the tree that is now wasted.

There appear to be possibilities of selling to a greater extent the advantages of our climate to such outdoor industries as small shipyards, airplane manufacturers, etc., who consume locally produced semi-finished products in varying amounts.

### Ceramics

Manufacturing capacity for refractories is already sufficient to take care of all open hearth, coke oven, boiler, blast furnace stoves, and melting furnace requirements in the district. There is a possibility of 2,000,000 to 3,000,000—9" equivalent of blast furnace lining grade per year, and 50,000 to 75,000—9" equivalent of super-duty fire brick not now made locally. Ingot mold hot top refractories could also be made.

We have the necessary raw materials for glass—silica sand, limestone and soda ash, also plenty of low cost fuel. The great expansion of the soft drink industry has increased the demand for glass bottles, and will continue to do so.

The existence of a large steel sheet mill in Birmingham would itself justify the locating of a vitreous enamel plant somewhere close by. The making in Alabama of tableware and whiteware in general, probably depends upon a rise in the general standard of living. The raw materials have to be assembled from many quarters, and Alabama is as favorable an assembly point as any.

### Agricultural and Dairy Products

Feed manufacturers of the Southeast are using large quantities of dried milk products purchased in other sections. A variety of sweet potato can be grown profitably in Alabama which would be a good substitute for corn as a carbohydrate feed for cattle. Dehydrating plants located here might provide a low cost feed, and could be profitable due to the growth of the livestock

business. The livestock industry is expanding rapidly, and Montgomery is now the largest market in the Southeast. There is opportunity for more packing houses in the State, and for the manufacture of by-products such as soaps and soap powders.

The dairy business, due to scarcity of feed and labor, is currently in bad shape, but can expand rapidly, especially if we will process into butter, cheese, dried milk and other salable products. We already have such plants, but not producing in sufficient quantities to supply our own needs.

Quick-freeze plants in all communities, expansion of the poultry and egg business, and lime rock crushing for fertilizer are other good opportunities.

### Paper Products

Paper products, school supplies, and stationery items are produced locally, but there is still a large volume purchased from producers in other sections. Wider publicity by local manufacturers could increase their sales to local purchasers. The market for cartons and boxes could be expanded and the manufacture of various types extended to cover the needs of many more users.

Much time and study has been given to the possibility of producing newsprint in the South. Some of our leading business men are now trying to crystallize these efforts. We do not have the raw materials in this district to produce fine papers.

One of the primary problems is the financial strength of the small manufacturers. The manufacturer, the volume purchaser, and capital, must all synchronize their efforts to meet this problem.

### Conclusion

The Committee hopes that those to whom this report is submitted will find some information herein of constructive value in the consideration of appropriate steps to improve the position of this section in the processing industries. A conscientious effort has been made to set forth from the buyers' viewpoint some reason for the very small proportion of purchases of Southern industry and institutions which are Southern processed items, and some of the items considered to offer reasonable opportunity for Southern manufacture. Some of the factors in the deficiency of the Southeast in the processing industries are subject to remedial action, but the influence of other factors will not be easily

(Continued on page 312)



# ASU TIME CYCLE CHARTS for MAGNESIUM ALLOY Products



**T**HE meteoric rise of magnesium into the circle of widely used aircraft materials has raised sizable and unexpected problems. These problems have been intensified by the fact that many industrial purchasing departments have had to acquaint themselves with the new material and its problems in a minimum of time. Lack of familiarity with actual production procedures is a common difficulty; unfamiliarity with regulations governing the distribution of fabricated magnesium alloy products is another.

For over a year the Aircraft Scheduling Unit at Wright Field, Dayton, Ohio, has stressed the necessity of close attention to "time cycles" in the procurement of controlled materials. The Materials Distribution Branch has distributed time cycle charts on aircraft steel drop forgings, other alloy steel products and brass mill orders, to encourage observance of the early ordering which is essential to maximum production.

Magnesium is not a C.M.P. controlled material, distribution being by allocation, but with its wider application in aircraft production, a knowledge of the "time cycles" for procurement of magnesium commodities is of paramount importance. The Materials Distribution Branch has prepared for ASU, with the assistance and cooperation of magnesium producers and fabricators, four magnesium alloy time

## Production procedures are analyzed as aid to proper scheduling of purchases

cycle charts on castings, forgings, sheet and extruded products.

In the past, magnesium for fabrication has been allocated monthly by the Aluminum & Magnesium Division, WPB, on the basis of requirements submitted by aircraft contractors to ASU and approved by ASU. This procedure served the purpose of channeling the inadequate supply of magnesium ingot into those uses which the services considered to be of first importance.

With the improved magnesium ingot situation and increased demand for magnesium alloy fabricated products, ASU and WPB have cooperated in simplifying magnesium procurement and distribution procedure. The existing forms for requesting allotment have been eliminated, and since January requests have been made on Form WPB-3462, which applies to consumers who use magnesium products for non-aircraft purposes as well as those whose output is for aircraft. Aircraft consumers file with ASU; non-aircraft consumers with WPB.

Details of the manner in which the new procedure will function are shown graphically in a series of four charts illustrated on the opposite page. The chart, *Time Cycle for Procurement of Typical Aircraft Magnesium Alloy Sand Castings Over Five Pounds* presents the procurement cycle for castings and regulations governing the distribution of all fabricated magnesium alloy products; the wrought products (alloy plate and sheet, extrusions, and forgings) charts show only the total time lapse from the placing of the purchase order to shipment.

Form WPB-3462 must be submitted at least ten weeks prior to the delivery month for all forms of magnesium. Although the filing date of Form WPB-3462 for magnesium forgings is the same as for other products, the time cycle for procurement and fabrication is about

*Continued on page 308*

### ORDER EARLY!

#### Time Required for Delivery of Magnesium Alloy Products

##### Sand Castings (over 5 lbs.)

Current Castings	10 weeks
New Castings	24 "
Forgings	14 "
Plate (over 1/4")	8 "
Sheet (under 1/4")	10 "
Extruded Sections	11 "

*Plus delay factors*



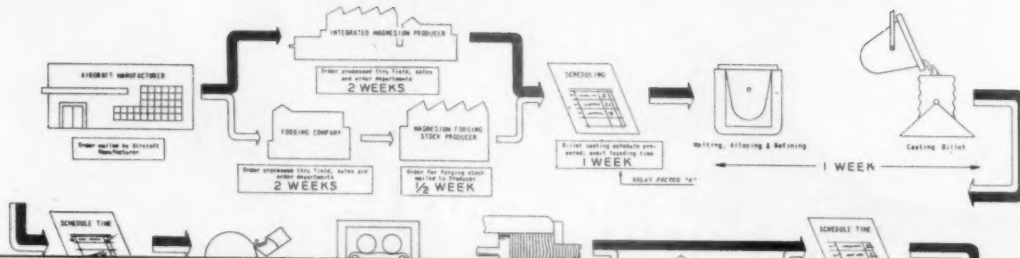
# TIME CYCLE FOR PROCUREMENT OF TYPICAL AIRCRAFT MAGNESIUM ALLOY SAND CASTINGS OVER FIVE POUNDS

DEADLINE FOR SUBMITTAL of WPD 3402

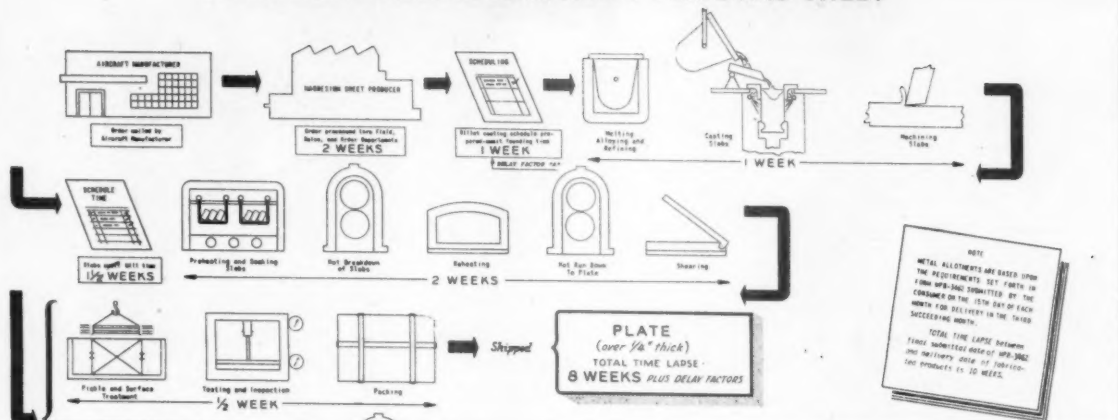
7th MONTH preceding delivery month	6th MONTH preceding delivery month	5th MONTH preceding delivery month	4th MONTH preceding delivery month	3rd MONTH preceding delivery month	2nd MONTH preceding delivery month	1st MONTH preceding delivery month	DELIVERY MONTH Shipment meeting requirements set forth in WPD-
				15th	15th 25th	7th 12th	7th

for  
NEW  
CASTING

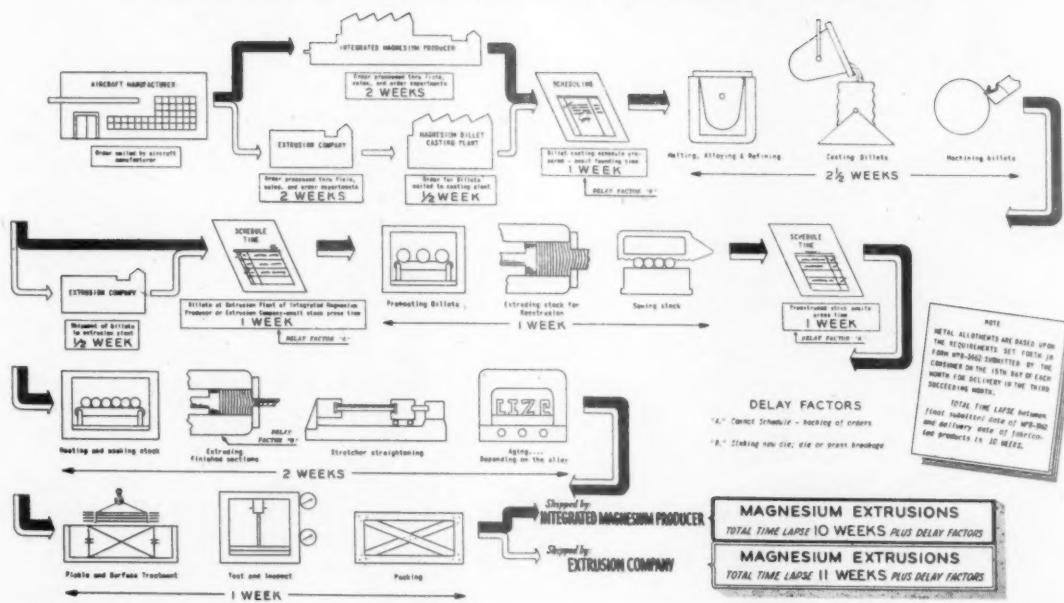
## TIME CYCLE FOR PROCUREMENT OF TYPICAL AIRCRAFT MAGNESIUM ALLOY FORGINGS



## TIME CYCLE FOR PROCUREMENT OF AIRCRAFT MAGNESIUM ALLOY PLATE AND SHEET



## TIME CYCLE FOR PROCUREMENT OF AIRCRAFT MAGNESIUM ALLOY EXTRUDED SECTIONS



# TEAM WORK



**keeps materials moving**

**T**HE sculptor who carves on oxygen with an invisible chisel has an analogy with the Purchasing Agent who sends an order posting on its way and then relapses into a mental sofa to blissfully await inevitable results.

There are important links in the chain of feeding material into the ever-hungry jaws of the production lines. Each link is important, extremely important and must be inexorably welded to the others.

In our constant search to probe any impedance in our material flow, we focused upon the oft-neglected storeroom, and particularly upon its personnel.

Our storeroom is the repository of all our procurement efforts. Within its confines are the results of the labors of our Purchasing Agents. The proper storing and proper handling of materials, and the proper maintenance of perpetual inventory records are, in a considerable sense, quite as important as getting the right supplier and having him meet

**The smooth flow of materials into production is a problem in human values, directing many individual efforts toward a single objective**

the delivery schedule and qualitative specifications.

The Purchasing Agent's interest in stores must be deep and concerned. He is not called upon to supervise these operations but his knowledge and suggestions are valuable additions. Our Purchasing Agents, in the past, had had a very dubious relationship with the storeroom and its staff. On the occasions of their visits, it would be for the sole purpose of levelling an accusing finger, coupled with a complaint of loss or of breakage.

We felt, after some study, that a more cooperative mood between Purchasing and Stores would go a long way to pre-solve many of the difficulties which were supposed to be an incurable disease.

Let us here describe, briefly, our

method of flow from the storeroom to the assembly lines.

The storeroom supervisor is responsible for the storing and accurate maintaining of every item of material on every bill of material, for every contract in our plant. His subordinates are assigned to one bill of materials each—one project.

There are then Production Material Expeditors who assist in feeding the right item to the right line at the right time. Too, they rush critically required materials through the receiving room and through inspection. The storeroom and the Production Material Expeditors are directly responsible to the Production Planning Department. The recording upon perpetual inventory records is assigned to clerks re-

*(Continued on page 310)*

**By J. H. SCHEINMAN**

Freed Radio Corporation  
New York City, N. Y.



# SIMPLIFIED SCHEDULING PROCEDURE

## Cuts Paper Work

**Major Changes in G.S.O. M-293 Are in "X" & "Z" Procedures—"Z" Process Eliminated—Gist of WPB Conference On How New Order Will Operate**

**T**HE major mechanism used by the War Production Board to schedule the shipment of orders in individual plants is General Scheduling Order M-293. This order covers approximately 75 major groups of products, including hundreds of individual items.

To achieve its purpose, M-293 has heretofore required a considerable volume of paper work—in some months, close to 50,000 reports, certain of them running as high as 200 pages each. In some cases the very voluminousness of the reports made it difficult for the War Production Board to use them effectively as a scheduling unit.

With the experience of a year's operation under M-293 and with the cooperation of industry, it has been possible to revise the order to do

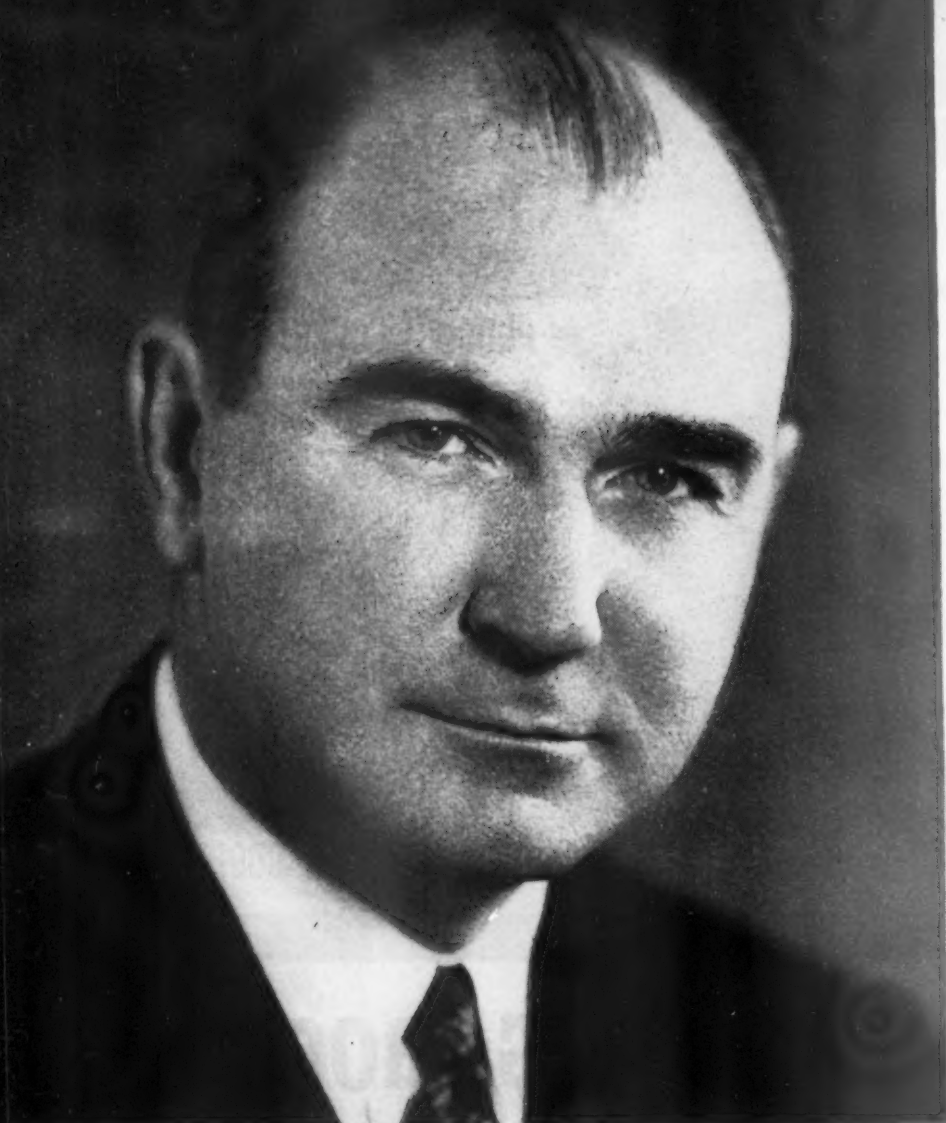
away with most of the features to which industry objected and to make it fit more closely to the conditions prevailing at this stage of the war effort.

Industry now knows what is expected of it so that the amount of detailed reporting to Washington can be cut down sharply. All the existing orders and regulations which dictate the order in which contracts shall be filled will still apply. Thus control of scheduling will still rest with WPB. But the responsibility for freezing their own schedules within the limits of the rules and regulations will be delegated to the manufacturers. WPB scheduling action will be confined to the more difficult situations and to the rescheduling required by major program changes.

The major changes being made in General Scheduling Order M-293 are in the so-called "X" and "Z" procedures. Under the "X" procedure, order boards of all the manufacturers of a given product are frozen for a fixed period ahead, and the rule up to now has been that the order board is frozen when it is mailed in to Washington. It may take hours of clerical time to pull the order boards of a big company off its record system, check it, and transcribe it to the specific form. Under the revision this work will be saved many manufacturers; the WPB will excuse certain manufacturers from filing their order boards, but they will be frozen just the same as though they had been filed.

The "Z" procedure as it has existed provided for what has been





**L. M. BOULWARE**

Operations Vice Chairman, War Production Board

described by many as a "chain letter procedure." Under the revised order, the "Z" procedure as such is out, and order identification is limited to prime contractors and the first level of subcontractors, except in rare cases.

A further revision of the order provides that manufacturers of specified products will be given the privilege of submitting their order boards of their own volition for freezing under certain conditions. It is planned that many products designated "Y"—those which re-

quire special WPB authorization for each purchase—will shortly be deleted from the order.

Due to the simplification of the order and its greater flexibility, it is the present intention to use M-293, so far as possible, as the vehicle for all scheduling that may be necessary in the development of the war effort, so that it will no longer be necessary for a company to operate under two or more scheduling orders applying to different products involving different forms and procedures.

### HOW REVISED M-293 WILL OPERATE

**F**OLLOWING condensed version of conference discussion conducted by L. M. Boulware, W.P.B. Operations Vice Chairman; J. E. Adams, W.P.B. Materials and Scheduling Officer; and R. M. Hatfield, Director of the W.P.B. Pro-

duction Scheduling Division recently held in Washington. It gives a graphic picture of how the new scheduling order will operate.

The revised order M-293 is one of the two types of basic mechanism we use to control war produc-

tion, declared L. M. Boulware, the first being the control of materials through CMP, the second being the control through the "L" and "M" orders. For the past year this M-293 has been the General Scheduling Order and has been rapidly becoming the most important of the "M" orders, and the one on which we intend to continue to put more and more emphasis in accomplishing the things that need to be done in a scheduling way.

Scheduling, is this business of having the proper components and materials arrive at the right time in the proper proportion to match up with related goods which all flow together towards a common objective—a piece of merchandise, a product or fighting mechanism.

The revisions in the order became effective on March 1st.

The most significant thing in it is the simplification. Maybe the most significant thing, from your personal standpoint of looking for something of interest, is that it will save vast amounts of paper work.

The revision of M-293 is simply a mechanical change in our method of doing something that takes advantage of what we have learned in operation with the manufacturers, with the war agencies and within our own shop during this past year of experience with this order.

It also indicates another thing, and that is the programming from the top is becoming more effective and is making it possible to use simpler controls at a great many of the component levels, although there is still great need for it in a great many of the tight places. We are sacrificing, we feel, none of the safeguards, none of the control, and we are picking up, we think, a great deal more of the aid we can get from



## PAPER SAVINGS

Resulting from Revision of M-293

### "X" Products



MANY MANUFACTURERS EXEMPTED FROM FILING ORDER BOARD. SHIPPING SCHEDULES FROZEN, WHETHER OR NOT ORDER BOARD IS SUBMITTED.

### "Y" Products



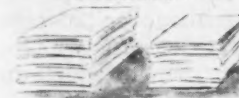
FEWER ITEMS DESIGNATED AS "Y" PRODUCTS. CUT-OFF POINTS RAISED, EXEMPTING SMALL BUYERS FROM OBTAINING PURCHASE AUTHORIZATIONS.

### "Z" Products



"Z" DESIGNATION DROPPED. ORDER IDENTIFICATION PROCEDURE TO BE USED ON ONLY A FEW PROGRAMS, CHIEFLY NAVY.

### Undesignated Products



NUMBER OF UNDESIGNATED PRODUCTS HELD TO MINIMUM, WILL INCLUDE ONLY ITEMS WHERE SCHEDULING PROBLEM IS LIMITED TO INDIVIDUAL COMPANIES.

## PRIMARY RESPONSIBILITY

for

## SCHEDULING SHIPMENTS

is the

## MANUFACTURER'S



THE MANUFACTURER ARRANGES HIS ORDERS IN A SHIPPING SCHEDULE IN ACCORDANCE WITH PRIORITIES REGULATION 1.

industry itself by gearing this plan more directly to what the manufacturers themselves practice.

Q. Will this have anything more than an indirect bearing on the volume of civilian production?

A. It wouldn't have any bearing on it, no bearing whatever.

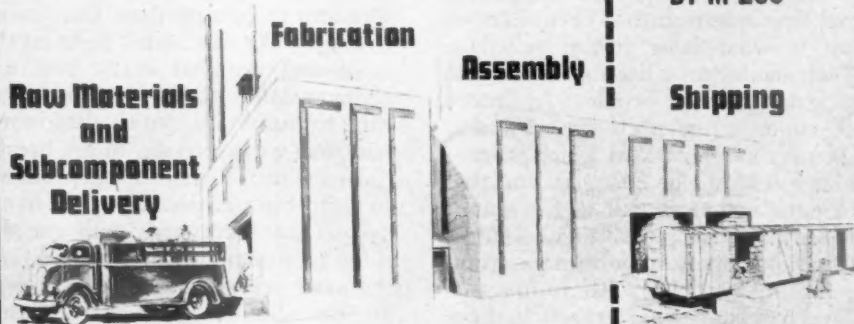
Joseph Adams: Before getting into the charts, I would like to take a few moments to go into the history of scheduling from the standpoint of the War Production Board and industry. In the early days of the war, scheduling was done on a plant by plant basis in those plants we were having critical problems from the standpoint of getting delivery to meet production schedules. As the war program grew and grew, this spot scheduling on a number of different bases became very difficult to handle and the need for some overall scheduling mechanism became apparent, with the result that a little over a year ago scheduling announced to the public. The old order M-293 was born, scheduling for all practical purposes on an industry basis, with industry sending in to the War Production Board complete order boards of their production as to what they were planning on making.

These boards were gone over by the War Production Board and the claimant agencies, revised and sent back to the companies whose schedules were frozen. During the course of operating with these frozen schedules, and we will, later on, get into

## M-293 APPLIES ONLY TO SHIPMENT SCHEDULES

NOT CONTROLLED BY M-293

CONTROLLED BY M-293



MANUFACTURER IS RESPONSIBLE FOR MAKING ANY ADJUSTMENTS IN FABRICATING SCHEDULES NECESSARY TO MEET APPROVED SHIPPING SCHEDULE

the detail of what a frozen schedule is, industry soon mastered what we were driving at from the standpoint of freezing these order boards, recognizing that when a manufacturer knows that he has a certain set production schedule and knows that these are the items that are needed and when they are needed, he can produce more of the product with the same number of people.

One of our greatest problems in the first year of the war was the fact that a manufacturer would start to build a turbine; he would get it half


way assembled on the floor and then have to pull it off and have to start working on something else. Scheduling eliminated that problem; but as the scheduling procedure became mastered more and more by industry, the War Production Board felt that a large part of the responsibility for the scheduling under certain cases could be placed upon industry without having the schedules come to Washington.

About four months ago we started working towards that end and eventually developed this amendment to

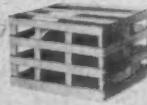


**WHEN A SCHEDULE IS AMENDED . . . .**


**WPB DIRECTS NEW SHIPMENT DATES**



**THE MANUFACTURER MAY MERELY REDIRECT SHIPMENTS**



**OR HE MAY HAVE TO REARRANGE HIS PRODUCTION**



the scheduling order. I might say at this point that this is a joint War Production Board and industry order, in that the amendments and changes were discussed with industry in our industry advisory committees informally before the order was ever sent to clearance and issued.

We will now go through the series of pictorial charts which explain how the new order will work.

In the discussion of scheduling, the first question that always comes up is what is a frozen schedule. That has always been a mystery to a great many people. A frozen schedule is that portion of a manufacturer's order board which is set—which will not be changed, and that in most instances will be the manufacturing cycle plus 30 days, unless some extremely important program comes up and WPB has to upset it. That will happen very rarely in these frozen boards, and has happened

**M-293 TABLES**  
DESIGNATION OF PRODUCT—REQUIRED REPORTING FORM

**X Product**  
ORDER BOARD FROZEN  
WPB AUTHORIZATION NEEDED BY PURCHASER

**Y Product**  
ORDER BOARD FROZEN  
WPB AUTHORIZATION NEEDED BY PURCHASER

**WV Product**  
ORDER BOARD FROZEN  
WPB AUTHORIZATION NEEDED BY PURCHASER

**Undesignated Product**  
ACTION DEPENDS ON SITUATION IN INDIVIDUAL COMPANY

**The Z Designation**  
IS TO BE DISCONTINUED

**TYPE OF M-293 PRODUCT**  
PUMPS  
PLIERS  
TEST EQUIP.  
BEARINGS

**APPLICABLE FORMS**  
COLUMN 1  
COLUMN 2  
COLUMN 3  
COLUMN 4

**COLUMN 1 FORM**  
SUMMARY OPERATIONS REPORT

**COLUMN 2 FORM**  
ORDER BOARD

**COLUMN 3 FORM**  
APPLICATION FOR AUTHORITY TO PURCHASE

**COLUMN 4**  
PERIOD FOR WHICH SCHEDULE IS FROZEN

very rarely, as we are now arriving at better programming.

**Q.** What do you mean by a manufacturing cycle?

**A.** Of course, we have to use an average cycle. In this case, that is the time from which the manufacturer starts to work on the job until he ships it. That is a manufacturing cycle. We allow 30 days for delays in delivery of material and the various other things that require time before jobs are put into production. We do recognize that this is an average. We can't hit it right on the head and say that every heat exchanger takes the same amount of time to build. We know that is not true, but we are trying to get breakdowns within some of these products so as to hit a reasonably good average so that everybody will get the same treatment.

In our scheduling, the word production scheduling has been tossed about pretty freely. We do no pro-

duction scheduling. We schedule shipments. We schedule what comes out of the door. What goes on in the plant, as far as the fabrication, the assembly, the raw materials, the sub-components, and deliveries is the responsibility of the manufacturer. We only direct shipments.

The primary responsibility for the scheduling of the shipments is the manufacturer's. He has the rules and regulations laid down in accordance with Priority Regulation No. 1 and he arranges his schedules in accordance with the existing regulations. If a schedule is changed, we merely—and I want to repeat this again—direct new shipping dates. The manufacturer can in many cases merely redirect shipments or, in some instances, he may have to rearrange his production. These changes are made in cooperation with industry because we do not want to make changes which cannot be fulfilled.

Before we get into the detail of the order, I would like to point out the various types of products there are within the order.

The "X" product is a product all of the producers of which have a frozen schedule. In other words, if a manufacturer is making pumps as an "X" product, every pump manufacturer will have a frozen schedule. He will have that set schedule—production cycle plus 30 days. The "Y" product is a product on which authorization must be secured from the War Production Board before an order can be placed. When that order hits the producer, it then becomes frozen in his schedule, but he may be making other things than those which are frozen.

An "XY" product is a product

**WHAT IS A FROZEN SCHEDULE?**



**COMPANY**  
Adams B. Co.  
Lucker Engineering Co.  
Pierce Turbine  
Ellis Rods  
Frank Aircraft  
Washington R.R. Co.  
Navy Shipbuilding Co.

**SHIPPING DATES**  
JUNE JULY AUG  
4 4 3  
4 4 4  
- - -  
- 10 -  
- - -  
6 8 -  
4 3 -

**WPB**

**SHIPPING DATES FOR A PORTION OF THE ORDER BOARD, ONCE ESTABLISHED IN ACCORDANCE WITH PRIORITIES REGULATIONS 1 & 18, CANNOT BE CHANGED EXCEPT BY SPECIFIC WPB DIRECTION. INDUSTRY DIVISION DETERMINES THE PERIOD OF THE FREEZE, DEPENDENT ON MANUFACTURING CYCLE.**

**PRODUCTS VS. UNCLASSIFIED PRODUCTS**  
under M-293, as amended

DESIGNATION	SET UP SHIPPING SCHEDULE	FILE SHIPPING SCHEDULE WITH WPB	SHIPPING SCHEDULE FROZEN	IF FROZEN & IF AMEND SCHEDULE IS FROZEN	CHANGES IN FROZEN SCHEDULE	CHANGES IN NON-FROZEN PORTION OF SCHEDULE
X	IN ACCORDANCE WITH PRIORITIES REGULATIONS 1 & 18	UNLESS DIRECTED BY WPB NOT TO DO SO	WHETHER OR NOT FILED WITH WPB	DETERMINED BY WPB DIVISIONS UNDER APPROPRIATE DELEGATION OF AUTHORITY	MAY BE MADE ONLY BY WPB	MADE BY MANUFACTURER IN ACCORDANCE WITH PRIORITIES REGULATION 1
Y	IN ACCORDANCE WITH PRIORITIES REGULATIONS 1 & 18	IF DIRECTED BY WPB TO DO SO OR IF MANUFACTURER SO DESIRES	ONLY IF IT HAS BEEN FILED WITH WPB	DETERMINED BY WPB DIVISIONS UNDER APPROPRIATE DELEGATION OF AUTHORITY	MAY BE MADE ONLY BY WPB	MADE BY MANUFACTURER IN ACCORDANCE WITH PRIORITIES REGULATION 1



in which previous approval must be had from the War Production Board, but the entire schedule for the entire industry is frozen. For example, we may say that all of this particular item over \$1,000 worth of purchases must be approved in Washington; everything under that, you go ahead and place your orders. So we must likewise have a freezing mechanism for the orders placed directly without the approval or else they would never be shipped.

Then we have the "Undesignated" product which is an action where we have four or five companies out of an entire industry where we are having problems getting deliveries, so we only freeze those companies making the product. That is the so-called production trouble-shooting type of an item.

We will now get into the detail of the "X" product. Take the example of pumps as an "X" product. That is the one which is on the chart here. In the past, all of the pump builders would have submitted to the War Production Board their complete order boards. These order boards would have been frozen on the date that they were filed and subject to change. All of the order boards would then be gone over by the War Production Board, approved and, where changes were necessary, sent back to industry.

Under the amended order, the War Production Board is going to excuse a large number of the manufacturers of these items from filing their order boards. In other words, they will freeze their schedules in accordance with Priority Regulation No. 1. Priority Regulation No. 18 is the freezing mechanism. They will keep a record at their plant on

any system which they can rapidly transfer the information to one of our standard order boards if necessary. We reserve the right to call for an order board at any date. In effect, we are excusing them from filing for 90 days and they may re-excuse them again at a later period.

Q. What does that do? Does that make them manufacture on the basis of their selling orders? In other words, the orders they receive from their customers, rather than under the direction of the War Production Board? Is that the principal effect of this?

A. The principal effect of this is that in the past if the manufacturer, say, had an IBM set-up on which he kept his order board and at the end of every month or just before he filed the schedule, he would have to run off his IBM set-up and shuffle all of his orders in accordance with Priority Regulation No. 1, fill out one of our standard order board forms, whichever one might be designated for the product, then mail that in and that would be frozen at the time he mailed it in. Then we reserve the right to make changes. We may or may not have made the changes under the new set-up.

Q. My question is where previously he was completely under the regulation, he would of necessity be guided by you as to his production rather than by his customer reactions. In other words, this would put greater reliance on his customer reaction.

A. No. He still stays within the same regulation, the same basic regulation, but we are placing the responsibility on him for arranging the schedule in accordance with Priorities Regulation No. 1 without

having the order board come into Washington to be gone over by the industry division.

Q. What I am trying to get at is, does this place a greater reliance on the manufacturer to his own selling force? Does this restrict the manufacturer? Today it is no longer a question of what you make; no matter what it is, somebody will buy it. Does this mean that he will have to go out there and do a little plugging?

A. No, because scheduled products are not loose products. Scheduled products are only scheduled because they are tight.

Q. Then all this does is eliminate some of the reporting procedure you previously got.

A. It eliminates the reporting procedure and eliminates a regular monthly policing of his order board, if you will. In other words, we have said to the company: "Okay, this is your responsibility. Here are the rules and here are the regulations. All that we ask of you is that you keep your records in such shape that if we do have to draw off an order board because of a radical program change, you can do it." This means that he can keep his production men in many instances on production and not have to go through some of this paper work, because order boards can't be drawn off by clerks; they have to be by men who understand what is going on in the plant. We are hoping that this saving will become larger at a later date. Is that clear?

Q. Yes.

A. Are there any other questions on these "X" products?

Q. How does that affect the situation where you issue an overriding

## "X" PRODUCTS

BEFORE AND AFTER FEB. 10TH CHANGES IN M-293

**BEFORE**



SHIPPING SCHEDULES FILED  
BY ALL MANUFACTURERS OF AN  
"X" PRODUCT

**AFTER**



WPB MAY EXCUSE SOME MANUFACTURERS  
OF AN "X" PRODUCT FROM FILING SHIPPING  
SCHEDULES

SHIPPING SCHEDULES ON "X" PRODUCTS WILL CONTINUE TO BE FROZEN  
WHETHER OR NOT THE SCHEDULE HAS BEEN FILED WITH THE WPB

## UNDESIGNATED PRODUCTS

File schedules here for freezing.

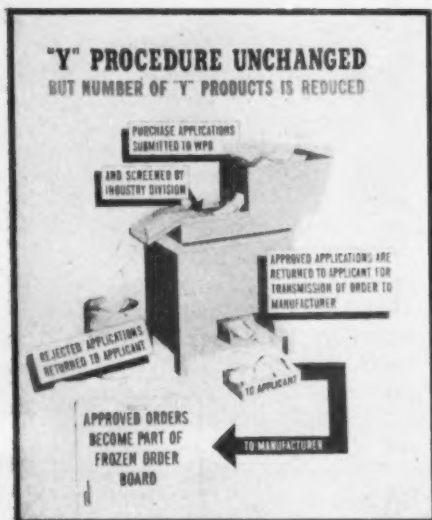
**BEFORE**

SCHEDULES ON UNDESIGNATED  
PRODUCTS SUBMITTED FOR  
FREEZING ONLY AT WPB DI-  
RECTION

ENTER BY  
INVITATION  
ONLY  
WALK IN

**AFTER**

MANUFACTURER MAY SUBMIT  
SCHEDULE ON UNDESIGNATED  
PRODUCTS FOR FREEZING ON  
HIS OWN INITIATIVE (AND  
STILL MUST SUBMIT IT IF SO  
DIRECTED BY WPB)



priority, as in the case of landing craft several months ago?

A. Any scheduled item can only have its place in that production schedule changed by the WPB Industry Division handling the product; for example, in the case of landing craft. If there was a conflict between two programs in a plant making pumps for this program, the industry division handling the pumps gets in touch with the claimants and then makes the necessary changes and decides with the claimants whether or not the change should be made, working through the programming part of the War Production Board. Then the direction is sent to the company from the division handling the pumps to make the change.

Q. In that case, you would first have to ask the manufacturer to send you in his order board on this new procedure.

A. Not necessarily. If we have a great number of changes in one company, then the logical thing to do is to pull in the order board. If there are only a few changes, that often can be handled by a visit or by a telephone call.

The "Y" products, as we said before, are those products where a purchase application must be submitted to the War Production Board before the order can be placed. A good example of that is moulding presses handled by the Chemicals Division, where the application is filled out, sent to the division and then the company with which the purchaser wished to place the order may be changed if the WPB Division, from its knowledge and experience, knows that the company cannot fill the order on schedule. Also, there is a required delivery time under the "Y" pro-

ducts. In other words, if a man says he wants to buy a "Y" product for delivery in June, the manufacturer cannot accept that order if he can't make delivery in June, and those orders become frozen in the schedule as they are received.

This is one of the easiest products to understand. There has been no change made in the "Y" product except that the overall number of them will be reduced by the new order because some of the more complex items, where we would have had to clear them in the past, can accomplish the same thing by making them "X" products and not having all of the companies file. Then the orders will, because the manufacturers cannot fill them on the required dates, float down to the companies that have open capacity.

#### Undesignated Products

One of the new features of the order is the change in the "Undesignated" products. The undesignated products were those on which we took four or five companies making a product and only froze those schedules and did nothing with the rest of the industry. Another company making that same product might feel that it has been discriminated against because it is doing a swell job scheduling its own production, scheduling its own shipments and has to keep on leap frogging its orders around to do that. So now, under the new order, it has the privilege of coming into the War Production Board and saying: "I

would like to have my schedule frozen, too." If he has good reasons for that, that schedule will then be frozen.

So there will not be the possibility of certain companies getting a better break by having their schedules frozen on the same product where others didn't have that advantage.

Under the old order, the claimant agencies had the privilege of going to their prime and getting from the prime a list of all of the components which he needed, etc., down the line, and paper is passed back and forth, with the subs advising the primes as to whether or not they could fill the order on schedule. They really had sort of a chain letter floating down from the claimant through the prime to the subs and to the subs' subs. This is the old "Z" procedure.

In place of the "Z" set-up, we believe that we have a feature which is very close to normal custom-manufacturer relationships and completely eliminates the vertical chain. This is the way that it will work:

The claimant agency can go to its prime contractor and get from him a list of the M-293 products which it will buy and also the companies from which they are buying. The whole Form WPB-3003 or whatever form happens to be used will be filled out, with the exception of the delivery column, before it gets to the producer of the M-293 product. All he must do is fill in the delivery dates. That in no way af-

*Continued on page 286*





# DEFRAUDING A PRIME CONTRACTOR DEFRAUDS GOVERNMENT



**Significant opinion of Federal Judge Picard stresses responsibility of prime contractor in auditing subcontractors' claims so as to protect both the government and themselves**

**T**HE opinion cited herewith has been called to the attention of all contractors in the Rochester Ordnance District by Colonel F. J. Atwood, District Chief, for their own information and, in some pertinent cases, for use in connection with their subcontractors. An important point of contractual relationship is raised: though the contracts are separately considered as between the government and prime contractor, and between the prime contractor and subcontractor; and though the prime contractor may be entirely innocent and honorable, and may exercise reasonable care in reviewing his subcontractors' claims—nevertheless, fraud in the latter instance is held to be fraud against the government, and the prime contractor may find himself in a very unfavorable position if the fraud is subsequently detected and the claim disallowed.

**I**N a case recently tried over a period of seventeen weeks in the Federal Court for the Eastern District of Michigan, Adolph Spalek and Wm. J. Zrenchik, partners doing business as Spalek Engineering Company, were found guilty of causing false claims to be presented to the Government. These partners were time-and-material subcontractors; their charges were made in the first instance to prime contractors and, after audit, were by the latter passed on to and paid by the Government. The court and jury held that, since the subcontractors' claims, as made to the prime contractor, were false and since these claims were afterwards passed on to the Government, the Government itself was defrauded.

Federal Judge Frank A. Picard, in a well-considered statement to the defendants just prior to passing sentence, said, among other things, the following:

"\* \* \* this Court has become convinced of certain practices existing between prime contractors and sub-contractors doing work for the Government of the United States during this war that ought to receive the fullest light and publicity, if those institutions we love shall not be further handicapped in their fight for survival. In short, I hold it to be my duty as a United States District Judge to proclaim those possibilities

so that all may know—not based on hearsay, but as sworn testimony in this very tribunal. For, if the practices indulged in by your company with the three prime contractors, Ford, Chrysler and General Motors, are prevalent, as you claim, then the amount of money the Government is being defrauded out of on many of its war contracts will reach astronomical figures, compared to which the sum involved in this case, though considerable, will be picayune. What's more, the evidence herein convinces this court that the possibility of such tremendous fraud does exist and it may be most fortunate for this Government that this case took seventeen weeks of court and jury's time; that the Government's attorneys were as industrious and insistent in detail as they were; that defendants' counsel were so arduous in their endeavors; and that there was an additional five months spent by several FBI agents in preparation before this case even approached trial. It may be that after all the Spalek Engineering Company has inadvertently done this Government a great service, because forewarned should make us forearmed and these Government war contractors compelled to give detailed information and submit to scrutiny of their charges in the future in a manner that was never anticipated nor contemplated before.



"I do not mean to intimate that everybody doing business with the Government is practicing some fraud—far from that—but when corporations as efficiently managed as Chrysler, Ford and General Motors can be hoodwinked, imposed upon, cheated, deceived, and defrauded, as the facts show they were in this case by Spalek Engineering Company, you defendants, then it seems to me there is no corporation exempt from the possibility of being a participant, innocent or otherwise, in such activities.

"All honest corporations, big and small, will welcome searching investigation. They deal through men—human beings—and I'm certain that the executive officers of the corporations mentioned, being the high-minded patriotic American citizens that they are, will be shocked at realization of how they were imposed upon by you defendants and will determine that probability of further imposition by others will be entirely eliminated or at least reduced to a minimum.

"While recognizing that too much interference either in auditing or anything else by Government impedes the war effort, it is nevertheless the duty of the auditors of the Army and Navy to insist that the Government is protected and getting value received. To them also should this case be a red light—an indication of what might be going on daily right under their very eyes.

"Let me explain how the Spalek practices affect every individual American, whether the prime contract is one on a fixed-price basis or cost-plus-a-fixed-fee, the two species of contracts entered into by the Government with prime contractors. I use the words "time and material" to describe cost-plus-a-fixed-fee contract. In a contract where the prime contractor agrees to produce and deliver a certain piece of war equipment or war material for a fixed price, the supposition has been that if the sub-contractor commits any fraud, that this is a fraud upon the prime contractor alone and not upon the Government. But such is not the case. Practically all contracts between the Government and prime contractors are subject to renegotiation and in arriving at a yardstick on the fairness of profits to be received by prime contractors, the Government is, to some extent, going to be influenced by what the prime contractor had to pay his sub-contractors. Now, if they arrive at a conclusion that a certain piece of work is worth so much and base that finding on experience or some yardstick

that is faulty *ab initio*, then the conclusion must be faulty.

"Let me give you an example. Suppose a job is invoiced to the prime contractor by the sub-contractor at \$300.00, enumerating certain hours as having been spent on that work, when in truth and in fact \$100.00 was for work entirely disassociated from the job itself, such as painting a house, then the prime contractor has paid \$100.00 that he shouldn't have had to pay. He puts this in his costs even on fixed price contracts, and then the parties meet for renegotiation. The prime contractor honestly believes, let us presume, that he received \$300.00 worth of labor and material. He produces his invoice to show what he paid and what the jobs were. And the Government's representatives, noting that he has actually paid out the money, noting the hours tabulated as having been spent on the work, would be justified in practically every case in accepting these figures as correct and basing their renegotiation profits allowable on that assumption. The result is that the Government 'pays the shot' where there is fraud, even when committed by some one way down the line whose participation in completing the job was never anticipated and where the good faith of the prime contractor could never be questioned.

\* \* \*

"Well, I feel it is the duty of this Court, in view of the evidence in this case, to challenge the attention of the Army, the Navy and the prime contractors to the fact that this Government should be obligated to pay only for what it gets, whether the contract is for a fixed price or one on a time and material basis. It can easily be seen how if practices of Spalek Engineering Company are being indulged in by others, as you claim, what a tremendous sum of money is being paid by the taxpayers of this country without value received.

"Renegotiation should and will cut down the loss, but whether fixed price or time and material contracts, if the camouflage and deception is always as deep and as well covered up as they were in the case at bar, then only supreme diligence and minutest scrutiny can protect the Governments' exchequer. In fact, it appeared from the undisputed testimony in this case that no auditor could have found these fraudulent charges from an examination of your books and records alone, due to the fact that the Spalek records were kept in such a way as to cover the fraud from the most careful auditing.

It was discovered on a lead given by one who had been a participant, after the Army auditors' suspicions had been aroused by their actions.

\* \* \*

"The additional lesson to be gleaned from this is that the hundreds of thousands of honest, patriotic business men and manufacturers must resign themselves to bear patiently with auditors, Government auditors, not only that they themselves may not be defrauded, but that they may not be used as the innocent victims in defrauding the United States. Whether the other 24,000 odd invoices on jobs would have shown the same percentage of fraud, more or less, or no fraud at all, is not in evidence and the Court therefore does not consider them in any way. It appears clear, however, that certain invoices proved as fraudulent were charged not only to contracts defendants had with the prime contractors where the prime contractors had a time and material contract with the Government, but some invoices were so charged on Government fixed price contracts.

\* \* \*

"This Court would not feel that he had done his duty either to defendants or to his country, if in announcing his sentence he did not refer to what your books have shown, which, to say the least, has given us reason to pause. To the thinking man, they present a sermon on how corruption naturally follows greed and avarice and how men who have labored all their lives to protect a good reputation, might be led astray or participate in some supposedly innocent acts that lead to very embarrassing complications or conclusions.

\* \* \*

"And yet, you know, there's something rather ironical about what happened to you, and this ought to be a lesson to anybody else who has similar ideas. While you were looking upon your fellow Americans as dumb, these men whose palms you were oiling with vacation money, honeymoon money, house-painting money and other money, these clerks whom you had sneak upstairs to pose as draftsmen were looking upon you as dumb, because you thought you were going to get away with it. They were the fellows who squealed on you. If a man will cheat for you, don't forget that he'll cheat against you."

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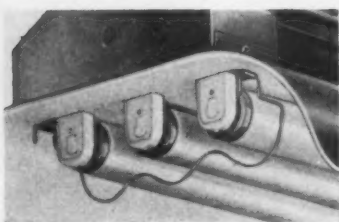


# New PRODUCTS • IDEAS

*Purchasing Agents and their Assistants are invited to Check the Coupons on the "Know-How" Pages, Nos. 10, 12, 14 and 16, for late catalogs and bulletins on New Products, Materials, Finishes, Equipment, etc.*



## FLUORESCENT SAFETY GUARD



SIMPLE safeguard that protects workers against the danger of possible injury from falling fluorescent lamps, and other safety uses, is announced by Wheeler Reflector Co., 75 Congress St., Boston, Mass. These safety guards prevent lamps that may be in an unlocked position from falling. Each lamp is completely cradled so that it cannot shift downward enough to fall from fixture. Guards are easily attached. Each guard is provided with clips made to slide over the thickness of the average non-metallic reflector. When used on steel reflectors, the clips can be pinched or squeezed together.

## PNEUMATIC TIRED LIFT TRUCK

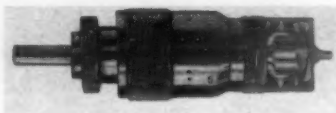


NEWLY developed gasoline powered fork lift truck of 2000 lbs. capacity on pneumatic tires, is announced by Willamette Hyster Co., Portland 8, Ore. It turns in its own length; all three tires are same size and interchangeable; two speeds forward, two speeds reverse; speeds up to 11 mph. Tilt 3 deg. forward and 10 deg. back, permitting handling of loads up and down inclines with safety; wheelbase 45 in., overall width 36 in., turning radius 66 in. Height of lift 108 in. from ground to underside of load.

## "COTTON LEATHER" RESEMBLES LEATHER

COTTONLEATHER is a woven cotton fabric of multiple plies, impregnated with thermo-setting resins and oils, and cured so that a tough, flexible, attractive product resembling leather is produced. It is flexible and has excellent abrasive resistance. It is used as a substitute for leather in shoe soles, high temperature pulley facing, bus and industrial flooring, and other uses requiring similar service needs. It is available in 6' x 18" sheets of thicknesses .105", .135", and .189". Southern Friction Materials Co., Charlotte, N. C.

## COUNTERSINK IMPROVEMENT



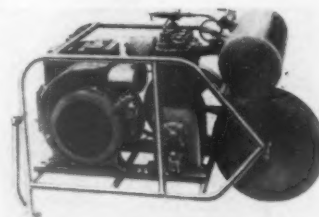
BASED on the principle successfully used in engine valve spring design, a split keeper which gives positive set to the retainer collar on bearing is incorporated in micrometer stop countersinks made by Aero Tool Co., Burbank, Calif. With this positive locking feature, maker states no amount of vibration will loosen the bearing retainer and cause damage to tool or material.

## DEVELOP TWIN PUMPING UNIT

NEW twin pumping unit is announced by the Blackmer Pump Co., Grand Rapids, Mich. The pumps are 90 gpm capacity (each) for pressures up to 100 psi, and are mounted on cast iron base. A single 18000 rpm motor serves as a driver through a reduction gearing. Operation of the pumps is controlled by newly designed twin clutches. Pumps may be operated singly or together. The unit provides double capacity to take care of temporary peak requirements, or, it permits the handling of two different liquids without contamination.

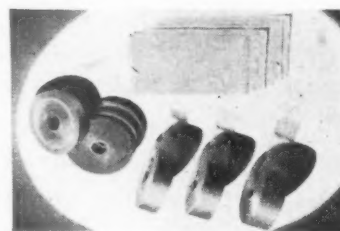
NEW twin pumping unit is announced by the Blackmer Pump Co., Grand Rapids, Mich. The pumps

## WHEELBARROW COMPRESSOR



WHEELBARROW type of air compressor is announced by the Quincy Compressor Co., Quincy, Ill. The unit weighs 225 lbs., and is easily wheeled by one man. It incorporates a powerful single-stage, air cooled, Model 216 compressor with air delivery in excess of 16 cu. ft. per minute at 80 lbs. pressure. The compressor operates at a speed of 1250 rpm, approximately double normal compressor speed. Front wheel is of steel. Belt tension adjusting device makes for easier starting of motor in cold weather. By means of a hand crank, the compressor load is taken from motor during starting.

## DIELECTRIC MATERIAL FOR CAPACITORS

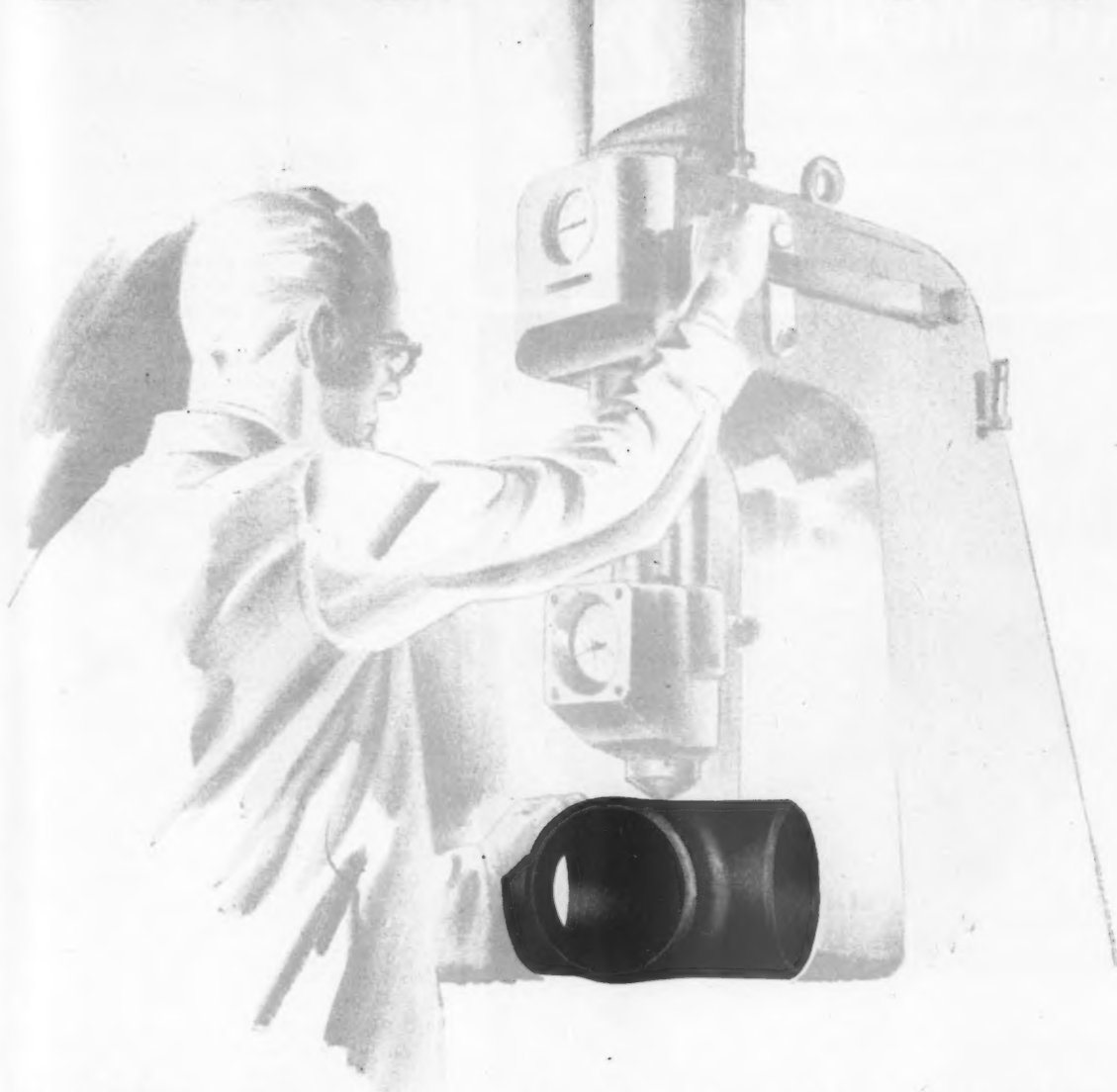


NEW synthetic dielectric material for capacitors, known as Lectrofilm, made of materials available in the U. S., is announced by General Electric Co., Schenectady, N. Y. It is said to have a greater combination of desirable properties than was previously available in any one dielectric material. It is available in both rolls and sheets and can be used in present capacitor production lines with very little change in equipment or method of manufacture.

(Continued on page 126)



# ENDURING



The BRINELL testing machine, shown above in Tube Turns' laboratories, scientifically determines the hardness, or wear resistance, of finished fittings.

Endurance is indispensable in welding fittings, for the destructive forces in piping—strain, pressure, vibration, corrosion and erosion—are more *highly concentrated at the fittings.*

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4. Lens is replaceable
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6. High impact-resistance
7. Comfortable over glasses
8. Rolled edge makes smooth contact with face
9. Scientifically ventilated
10. Easily adjusted

GOGGLES • RESPIRATORS • GAS MASKS • HELMETS

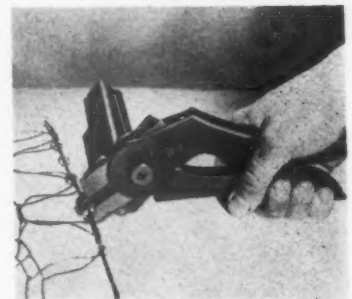
**WILLSON**  
DOUBLE  
PRODUCTS INCORPORATED  
READING, PA., U. S. A. Established 1870

### EYE SAVERS



A RUGGED, all-plastic goggle for general industrial utility, with one-piece lens of shatterproof methacrylate that withstands heavy impact and is highly resistant to pitting caused by sparks, is announced by Watchmocket Optical Co. Inc., Providence 3, Rhode Island. Curved plastic frame fits the face snugly but comfortably, shielding eyes from every angle. Other styles available for use over prescription glasses.

### A WAR DEVELOPED TOOL



THIS is said to be one of the first war-developed tools to be announced for post war civilian use. It is a magazine fed stapling plier which wraps the staple around the work in much the same manner as the conventional hogring plier, but many times faster. It applies 60 to 70 rings with one loading. Ring diameter 1/4". Ring overlap 1/4". Wire size No. 16. Bostitch Co., 144 Division St., East Greenwich, R. I.

### NEW FLUXED WIRE SOLDER



NEW TYPE OF WIRE SOLDER WITH FLUX IN GROOVES

A NEW type of fluxed wire solder, which contains flux in longitudinal grooves on the surface rather than in the conventional core, is announced by National Lead Co., 111 Broadway, New York. Name of new material is Fluxrite. It is said to insure thorough and complete fluxing, with unbroken flow of flux. It comes in same diameters as regular cored solder. It is available in two compositions designated as Red Stripe and Green stripe, referring to the color of the flux which has been dyed for easy identification.

(Continued on page 128)



# Advance Against Depression

**B**ANKERS wired caution. Friends of the company advised against it. But a farsighted management stood firm. Their idea of defense against depression was attack.

So started another phase of major expansion for The Youngstown Sheet and Tube Company - - in 1933, proposed for construction 79-inch continuous hot and cold strip mills, most advanced type to date, -- in 1934, a great seamless tube mill, first of its kind built in America in over 7 years.

In 1935, the new hot strip mill began to roll the steel that helped speed recovery--steel for millions of automobiles and trucks, refrigerators, ranges, washing machines, furniture, roofing, tin plate. Other continuous mills followed. Plant additions and improvements kept coming through all those lean years - - to make better steel.

Thus Youngstown advanced, grew stronger, contributed to the nation's recovery from depression--an opportunity better to serve America created by free enterprise. Only in a free economy could any company retain good profits made in good times to invest in jobs and improved equipment in bad times. Only under this system would a management be permitted to decide on a \$25,000,000 expansion in a depression. And only with full restoration of free enterprise can American industry hope successfully to do its share of the colossal task of rebuilding world peace and prosperity after the war is won.

Historical Series . . . No. 11

## YOUNGSTOWN

THE YOUNGSTOWN SHEET AND TUBE COMPANY

YOUNGSTOWN, OHIO

Manufacturers of

CARBON - ALLOY AND YOLOX STEELS

Pipe and Tubular Products - Sheets - Plates - Conduit - Bars - Tin Plate  
Rods - Wire - Nails - Tie Plates and Spikes - Alloy and YOLOX Steels

CHARGING COLD SCRAP INTO ELECTRIC FURNACE





## Put this Gun into the hands OF YOUR FINISHING MEN

### To Speed Production

The Paasche Type CUB High-Production Airbrush provides the fastest method for spraying all types of finishing materials. Its light weight (only 22 oz.), perfect balance and "hand molded" grip enable men or women operators to work longer hours at full production.

### To Improve Quality

Its perfect atomization assures finer finishing at top speed. Micrometer calibrated spray pattern control provides precise, easy adjustment for any job.

### To Slash Replacement Costs and Headaches

The sturdy construction—with all working parts enclosed in strong, machined brass body—protects against damage and assures longer life. Floating air valve takes up wear, prevents leaks. The CUB stays on the job!

*These special advantages of the Paasche High Production Airbrush are typical of the superior quality features to be found in the entire Paasche line. Get the facts and you'll get Paasche Airpainting Equipment.*

### SEND FOR NEW CATALOG

It illustrates and describes all the various types of Paasche manual or automatic Airpainting Equipment. Write today for your Free Copy. Paasche Airbrush Co., 1954 Diversey Parkway, Chicago 14, Ill. Paasche Airbrush (Canada) Ltd., 154 Vaughn Road, Toronto.



## COUNTING SCALE



EXTRA sensitive counting scale for small parts, designed to provide the extra sensitivity needed for quick and accurate counting of very small parts of uniform weight, is announced by Toledo Scale Co., Toledo, Ohio. Small parts weighing as little as 3/64 ounce cause a perceptible movement of indicator. Model illustrated is equipped with two 10 lb. beams graduated by 1 oz. With these two beams, this scale can be used for weighing up to 20 lbs. in addition to counting. Its counting capacity is 25 lbs.

## ANNOUNCE SPEEDALOY HIGH SPEED TOOLS

SPEEDALOY is a new tool alloy produced by the Tungsten Alloy Mfg. Co., Newark, N. J. It is a cast

tungsten-chromium-cobalt alloy that is said to stand up better than high speed steel, and to have higher shock resistance than tungsten carbide. Maker says it can be run faster than high speed steel with about the same depth of cut, and that it will machine all materials with exception of manganese steel and chilled iron, proving exceptionally suitable for chromium and nickel alloys, including stainless steel. Speedaloy comes in solid tool bits, flats and a wide variety of tipped tools.

## ALUNDUM GRINDING WHEELS



GRINDING WHEELS made of their 57 Alundum abrasive are now available for general use, according to the Norton Co., Worcester, Mass. 57 Alundum abrasive is an improved aluminum oxide product developed by Norton research. It is more friable than regular Alundum abrasive. Wheels have a fast, cool cutting action, as they tend to keep themselves sharp, but they also have the ability to hold shape and require few dressings. The wheels are available in Norton VE vitrified bond as well as in regular vitrified bond in a wide range of grain sizes, grades and structures.

(Continued on page 130)



*By any light... in any age*

# BRASS

**IS ALWAYS MODERN**



WHEN whale oil lit the evening reading tables of 1807, it glowed from burnished brass lamps . . . symbols of civilized living that lit the way forward from the smoky hearths and pine tapers of log cabin days. And fifty years later, when kerosene became plentiful, brass lamps with brass burners and fittings became more firmly ensconced than ever as modern home lighting fixtures.

Today, more than 130 years after the whale oil lamp . . . nearly 2,000 years after the first rude lamplight shed its rays over delicately wrought Chinese brass . . . this ageless alloy is still among the foremost of the modern

metals for smart lamps and lighting fixtures. And why? Two reasons. One, because homeowners and decorators have never found another metal that gives the same golden-yellow richness and cheerful gleam of brass. And the other, because brassware fabricators have never found another metal that is so easy to machine and form into so many products. So it is safe to say that 100 or 1,000 years from today, brass will still be modern . . . because it will always be the classic of its kind.

Here at Bristol, brass of many different analyses has been rolled and drawn for a multitude of uses . . . in-

dustrial, functional, and decorative . . . though today it all goes to munitions makers to rid the world of Huns and Japs. When that job is done, then Bristol will turn to the job of helping modern-minded manufacturers win new peacetime victories with Brass, the modern metal. And it's not too early to talk things over, right now.

**THE  
BRISTOL BRASS  
CORPORATION**

*Makers of Brass since 1850, Bristol, Conn.*

# Get These 6 Features in Waterproof Work Clothing

## ASK FOR THE RAINFAIR LABEL



Gum strapping vulcanized on shoulder seams and arm holes for water-tightness, strength.

Rainfair Vulcanized assures 100% Water-proofness, unusual strength at seams, stubborn resistance to wear and deterioration.

Ample room throughout for freedom of action.



Reinforcing stays under fasteners give greater endurance.

Seams cemented, hand-rolled to make them 100% water-tight.

Rivets at points of strain provide extra strength for strenuous service.

BUY WAR BONDS

★ Backed by more than 60 years of specialized experience, the Rainfair\* Vulcanized label in waterproof work clothing is your guarantee of topmost quality. Ask for it when buying

★ RAINCOATS ★ HATS ★ APRONS ★ SUITS  
★ LEGGINGS ★ INDUSTRIAL SPECIALTIES

While military needs are our major responsibility today, we are able to furnish Vulcanized work clothing in limited amounts for essential civilian use. Write for catalog of products and name of nearest Rainfair distributor.

## RAINFAIR INC.

\*Reg. U. S. Pat. Off.

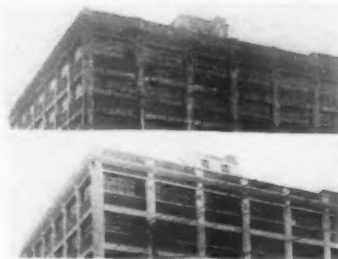
FORMERLY CHICAGO RUBBER CLOTHING CO., DEPT. 34C, RACINE, WIS  
Also Manufacturers of Rainfair Storm Coats and Coated Fabrics for Industry

### ALL-PURPOSE BLOWER



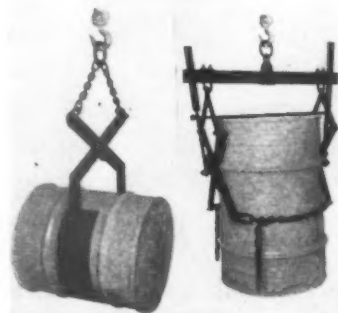
NEW all-purpose blower is announced by Ilg Electric Ventilating Co., Chicago 41, Ill. Eight different arrangements are available, which include—blower only; blower and stand only; blower and inlet flange only; blower and discharge flange only; blower, inlet and discharge flange only; blower, stand and inlet flange only; blower, stand and discharge stand only; or, blower, stand, inlet and discharge flanges. It is powered by a series wound 110 volt, single phase, 60 cycle, sleeve bearing type a c motor that operates at 3400 rpm.

### MASONRY PROTECTION



NEW masonry protective coating known as Waterfoil, is announced by A. C. Horn Co., Long Island City 1, N. Y. It is said to form a fine, hard heavy coating which literally welds itself to concrete, brick or stucco surfaces. The bond is two-fold, physical and chemical. Rusting of steel reinforcing bars or spalling is said to be inhibited. Waterfoil is easily applied by brush.

### FOR BARRELS AND DRUMS



NEW lifters designed to handle barrels and drums, horizontally and vertically, are announced by Never-Slip Safety Clamp Co., Mamaroneck, N. Y. The vertical lifter is merely lowered onto the barrel, and encircling chain placed in the grab hook. Adjustment for various diameters is automatic. The horizontal lifter is simple in operation, both in application and removal. Standard capacity of lifters is 1200 lbs. Special sizes are available.

(Continued on page 134)



For those hard-to-get tubes and parts



He's Your Man!

HE's only human, so he may not click *every* time —but your local round-the-corner RCA Tube & Equipment Distributor is the nearest thing we know of in the Miracle Man line.

So if you're a manufacturer who uses electron tubes and components, you're missing a real bet if you don't make use of the 4 wartime services he's equipped to offer you today:

- 1—Local supplies
- 2—Technical "know how"
- 3—Quick delivery
- 4—Intelligent emergency expediting

And if he doesn't have right in his own stock the part you need to fill a rush priority order, he'll do his triple-X doggonedest to locate it for you.

He's your man! If you don't know his name, write or wire us and we'll let you know.

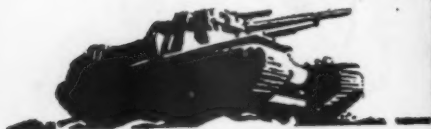


RADIO CORPORATION  
OF AMERICA

CAMDEN, N. J.

# Here's why American Free

Here's  
Free Enterprise  
at work



## Teamwork Sets Up Manufacturer's Production and Keeps it Going

A heavy equipment manufacturer needed help in setting up a new war production line. Black & Decker helped him select tools of the right speed and capacity for top efficiency—Electric Nut Runners, Drills, Stud Setters, Screwdrivers and Grinders to fit each operation. The manufacturer wrote: "Thanks for the assistance—it helped us get under way much faster. *And we especially appreciate your prompt repair and parts service.*" Service in tooling up—service in keeping tools on the job—that's Free Enterprise at work, to bring the day of Victory sooner.



## How a Black & Decker Distributor Helped Elco Build P.T.'s Faster

When Electric Boat Company needed help in tooling for mass production of P.T.'s, they called their Black & Decker Distributor. With Elco's shop foreman, the distributor charted Elco's course: Black & Decker Electric Saws, Drills, Nut Runners, Screwdrivers, Sanders, to speed thousands of "repeat operations" in P.T. construction. Freedom of Enterprise makes such teamwork possible—and such teamwork makes Free Enterprise work!



# Enterprise *works*

**S**HOWN on this page are typical examples of how war producers have used their heads and Black & Decker Portable Electric Tools to step up war production . . . of how American producer, tool manufacturer and tool distributor have *voluntarily* pooled their efforts, ingenuity and experience in this common cause.

Such teamwork helped build America into the production giant she was before the war. And this same teamwork proves *now* . . . in constantly increasing production of better and better fighting equip-

ment . . . that only through Free Enterprise could America have become the arsenal of democracy.

This same voluntary system of putting brains and brawn and money and machinery to work must be preserved . . . to keep intact the America we believe in. The better things to come in our post-war world . . . for which American industry of its own volition is projecting plans now . . . will not be possible if the initiative of Free Enterprise is stifled or destroyed. The Black & Decker Mfg. Co., Dept. 764, Towson-4, Maryland.

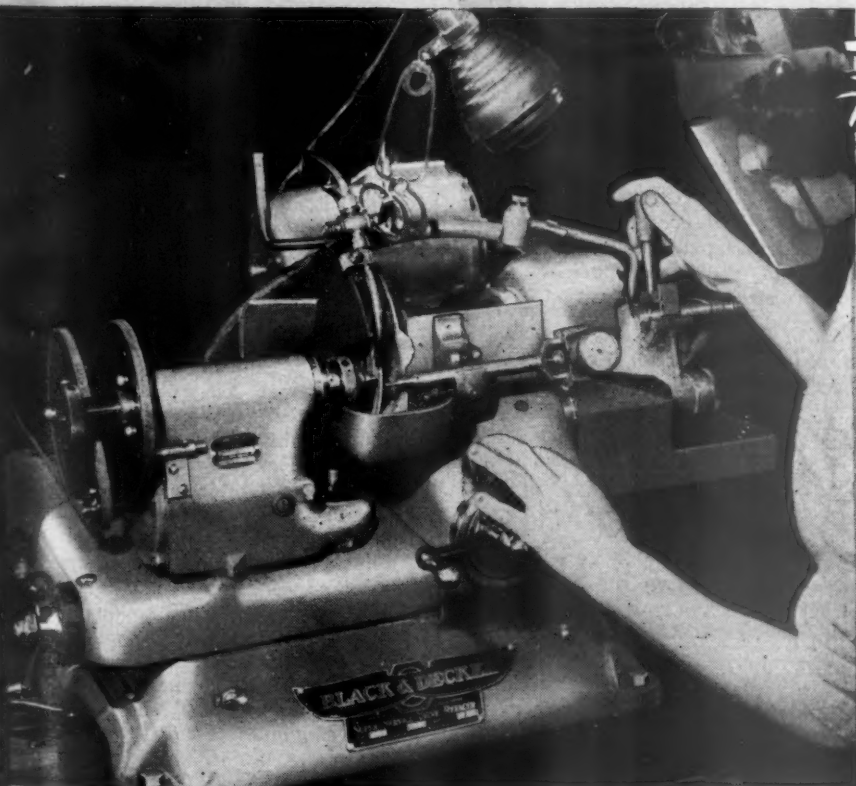
LEADING DISTRIBUTORS



EVERYWHERE SELL

## Black & Decker

PORTABLE ELECTRIC TOOLS



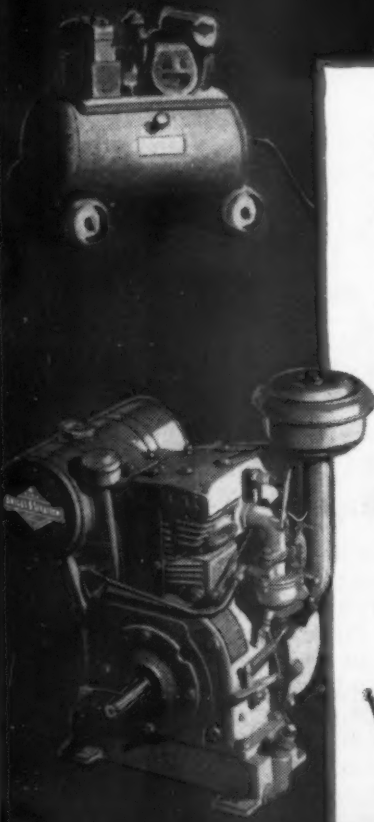
### Ingenuity and Initiative Convert Auto Repair Shop for War Work

This 9-man auto repair shop's Black & Decker Valve Refacer now does close tolerance grinding on bomb parts. Nobody ordered the shop owner to convert—or showed him how to adapt his peacetime Refacer to a new and different use. But initiative and ingenuity, born of Free Enterprise, resulted in a successful adaptation that has doubled production, saved man-hours and turned out amazingly accurate work.



## WHEN REPAIR CREWS *Take Over*

They're doing a great job — those ground crews — repairing damaged planes and other fighting equipment at front line bases, and everywhere. For operating riveters and other repair and assembly equipment, air compressors are powered by sturdy, dependable air-cooled gasoline engines. One more front line duty for the hundreds of thousands of Briggs & Stratton engines now "In Service".



Just as Briggs & Stratton engines have been war-proved, so have our facilities for manufacture. The way those rugged, dependable engines have come through with flying colors is definite proof that Briggs & Stratton high standards of quality materials and precision manufacture could be, and are being maintained in face of wartime production schedules.

Our engineering and production staffs are geared up to help you on present war needs, or on your planning now for future production of gasoline powered equipment.

*"It's powered right — when it's powered by Briggs & Stratton."*

**BRIGGS & STRATTON CORP.**  
MILWAUKEE 1, WISCONSIN, U.S.A.

BACK THE ATTACK  
BUY WAR BONDS



## FOOT OPERATED SHEAR



FOOT-powered squaring shear is announced by the Famco Machine Co., Racine, Wis. Knives have cutting edges capable of shearing up to 18 gauge mild steel. High foot pressure is achieved with minimum effort through leverage of foot pedal. Five widths are available—22, 30, 36, 42 and 52 inch. The last three are furnished with a hold-down attachment to hold the stock in place as it is being cut. All models are equipped with front, back and side gauges.

## ANNOUNCE NEW ZINC PLATING SOLUTION

SPECIAL alkaline solution for zinc plating is announced by Hanson-Van Winkle-Munning Co., Matawan, N. J. with which is used S-B addition agent for producing satin-bright to bright deposits. Zinc-aluminum anodes are recommended in the S-B solution. Coating can be subjected to forming, bending or drawing operations without rupturing or lifting, and can be soldered without difficulty.

## ENGINE DRIVEN WELDER



A NEW "Shield-Arc" engine-driven welder rated at 200 amperes of light weight, rugged construction with powerful enclosed rubber mounted engine of 29 hp, is announced by the Lincoln Electric Co., Cleveland, Ohio. The unit, complete with base and canopy has a current range of 40 to 250 amperes. Dual control of welding current is accomplished by adjustment of series fields and generator speed. For metallic arc welding, with bare or coated electrodes, the welder also supplies uniform welding current for carbon arc welding. Engine speed can be adjusted to fit individual job.

(Continued on page 136)



## Let KIMPAK Solve Your Post-War Packaging Problem

TODAY, KIMPAK—the marvelous new shock-absorbing packaging—is convoying war products safely to their destinations. TOMORROW, it will be available aplenty to provide better, thriftier, more attractive protection of peacetime products, ranging from elephant-sized machines to delicate vials of perfume.

KIMPAK is a soft, cushion-like creped wadding, which may be obtained in sheets or in rolls. Ten standard types, in various thicknesses, are available to meet individual requirements.

It prevents chafing of your product's surfaces, and absorbs jars more effectively than many packaging substances of far greater density. It eliminates need of "nesting" with loose material. It cuts packaging time, reduces package size and weight, requires relatively little space in the shipping room. *It's Tomorrow's Packaging!*

Telephone, write or wire for the KIMPAK representative today. Address: Kimberly-Clark Corporation, Neenah, Wisconsin.

**Kimpak**  
REG. U.S. PAT. OFF. & FOREIGN COUNTRIES  
**CREPED WADDING**

A PRODUCT OF  
**Kimberly  
Clark**  
RESEARCH

\*KIMPAK (trade-mark) means Kimberly-Clark Wadding



One of the basic applications of KIMPAK—protecting bottled liquids. This requires packaging which can cushion outside shock, meet rigorous requirements of overseas shipment. Flasks shown here are each enclosed in a sheet of water-resistant, soft, resilient 10-ply KIMPAK, type 531, with 20-lb. Kraft paper backing.



Flasks are so wrapped in KIMPAK as to provide six layers over cap and bottom, with one layer around exterior. This averts breakage from stacking and jolts, protects liquid against sudden temperature changes.



Finally, each flask, now wrapped in its protective coat of KIMPAK, is inserted in a corrugated cell and in containers which are then packed in wooden cases and protected by additional pads of soft, resilient, 10-ply KIMPAK.



Any Way You  
Look At It...



### ...the Superiority of Arkwright Tracing Cloths Stands Out!

Countless draftsmen choose Arkwright Tracing Cloths because the base cloth is tough . . . doesn't tear or fray, no matter how often it's run through blueprint machines. Others choose Arkwright Tracing Cloths because of their matchless transparency . . . or because they're surfaced to take pen or pencil line with equal facility. What do you look for in tracing cloths? No matter! Try Arkwright! You'll find them superior on every count! Arkwright Finishing Co., Providence, Rhode Island.



*Arkwright*  
**TRACING CLOTHS**  
AMERICA'S STANDARD FOR OVER 25 YEARS

### MAGNESIUM GRINDERS



NEWLY equipped grinders for magnesium grinding are announced by Hammond Machinery Builders, Inc., Kalamazoo, Mich. Hammond 10", 12" and 14" grinders are equipped as illustrated with heavy plate wheel guards which have direct exhaust outlets (no pockets) for connection to dust collecting system. Machines are also equipped with explosion proof electrical equipment. Other Hammond grinders can be similarly equipped.

### HELIUM SHIELDED ELECTRODE HOLDER

NEW helium-shielded arc welding electrode holder for manual operation is announced by the Electric

Welding Divn., of the General Electric Co. The new holder, which may be used with either helium or argon gas, is especially designed for use in the welding of light metals, such as magnesium and its alloys, where precise heat control and protection from the oxidizing effect of

the air are required. It can also be used in the welding of other hard-to-weld metals, such as aluminum and stainless steel. The holder is light and consists of Textolite handle, a steel gas nozzle, and a copper electrode clamp fitted with a tool steel spring collet.

### ROTARY SURFACE GRINDER



NEW vertical spindle rotary surface grinder (No. 24), is announced by the Hanchett Mfg. Co., Big Rapids, Mich. Structural proportions are heavier and stronger than conventional type machines of equal capacity, according to the manufacturer. The 30-inch rotary magnetic chuck is equipped with a Neu-T-Rol demagnetizing switch and is traversed into grinding position by push-button control. The grinding wheel head has hand, power or automatic traverse with power being furnished by a 2 HP 900 RPM motor.

(Continued on page 138)

## "ALWAYS DEPENDABLE"

The great dependability  
of GRIFFIN BLADES  
is due to their extra  
efficient, long wear-  
ing teeth. Ask  
your distributor  
about them!



MADE BY  
G. W. Griffin  
Co.

FRANKLIN, N. H.  
SINCE 1880



GENERAL  
SALES  
AGENTS

JOHN H.  
Graham & Co.  
INC.  
105 DUANE ST.  
NEW YORK 8, N. Y.

**Griffin** HAND & POWER **Blades**



# Pittsburgh Quality

## *maintained in Welded Steel Tubing*



TENSION TEST



EXPANDING TEST



CRUSHING TEST



FLATTENING TEST



TORSION TEST



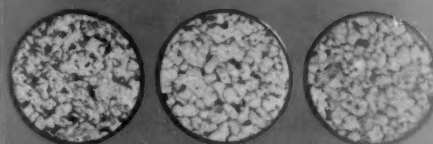
ANNEALING

The facilities and experience for quality control built up through forty years of high standards in tube manufacture are applied by our craftsmen to assure maintained quality in our welded steel tubing.

Within the range of sizes covered by our welded tubing manufacturing equipment we are in a position to produce welded tubes fully tested to insure meeting your specifications. Integrity of wall throughout is proved, and when annealed, photomicrographs show uniform steel structure at all points.

Full information as to sizes available, delivery possibilities and other data upon request.

**PITTSBURGH STEEL COMPANY**  
1671 Grant Bldg., Pittsburgh 30, Pa.



THE WELD      ADJACENT TO THE WELD      OPPOSITE THE WELD

Pittsburgh Welded Tubing achieves solid wall effectiveness within accepted chemical limits. Proof of the integrity of wall structure when fully annealed is shown by the photomicrographs above. Uniform steel structure is revealed at all points. Losses of physical properties across the weld are prevented by precise control at all stages of manufacture.

**Pittsburgh**

SEAMLESS  
& WELDED

**Steel Tubes**





# TIME-SAVER...

## for an **ENTHUSIASTIC** Industry

Stack the pallets—or trays—high as you want ... bind them with tough Stanley Steel Strapping ... and quick as that you have a safe, sturdy, weight-saving unit ready for shipment.

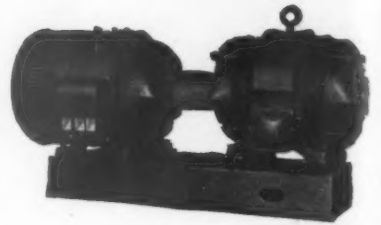
That's how Pratt & Whitney Aircraft uses Stanley Steel Strapping for packing airplane cylinders ... because in wartime the aircraft industry can't wait for time-consuming, old-fashioned crating where modern strapping will serve.

And when a Stanley-strapped pallet load arrives, time is saved again. None is wasted in nail-pulling or counting contents. Handlers just cut the strapping, stack the trays in stock. Also with Stanley Steel Strapping used to bind the load, danger of damaging castings by careless nailing is eliminated.

Use Stanley Steel Strapping. You'll save packing materials as well as time! The Stanley Steel Strapping System includes tools, reels and accessories.

**THE STANLEY WORKS** STANLEY  
Steel Strapping Division . . . New Britain, Conn.

## 15 TO 30 MAN WELDER



CENTURY AC to DC motor generator set will supply welding power for from 15 to 30 men welding at the same time, according to the manufacturer, Century Electric Co., St. Louis 3, Mo. The motor is a 160 hp, 440 volt, 60 cycle, 3 phase, 1160 rpm, one hour 50° C, temperature rise, squirrel cage induction motor with drip proof construction. Motor drives a 70 volt, 1500 amp, flat compounded, direct current generator, rated one hour 50° temperature rise. Machines are capable of being operated in parallel.

## CONSTANT RESISTANCE WELD CURRENT

NEW current-regulating compensator for resistance welding machines is announced by the electronic control

section of the General Electric Co. It is specifically designed to facilitate consistent welds by holding the rms, or true heating value, of the weld current constant for any heat-control setting, without requiring continual manual adjustment. It can be applied to most General Electric resistance welding controls which incorporate the phase-shift method of heat control.

## AIRCRAFT RIVETING HAMMERS



NEW line of slow hitting aircraft riveting hammers is being introduced by Forss Pneumatic Tool Co., Rockford, Ill. Hammers are said to have excellent power, perfect control, and smooth operation. Exclusive features include a two-finger trigger, metered air throttle valve, offset handle, and good balance. The hammers are now available with either the new offset or conventional grip handles in two sizes. Smaller size has nominal capacity of  $\frac{1}{8}$ "— $\frac{5}{32}$ " rivets, and the larger size, has nominal capacity of  $\frac{1}{4}$ " rivets.

(Continued on page 140)



# Charge

## TRUCK BATTERIES

### In Their Working Areas

Returning electric trucks to working areas from a central charging station wastes battery power, time and labor. Save all three . . . and keep trucks on the job . . . by "spotting" G-E Battery Chargers at strategic locations so the trucks can be charged as needed. They are extremely easy and economical to use, and require virtually no maintenance. The truck operator just plugs them in and the charger does everything else. Detailed data on request from Section A348-20, Tungar and Metallic Rectifier Division, General Electric Company, Bridgeport, Connecticut.

Hear the General Electric radio programs: "The G-E All Girl Orchestra" Sunday 10 P.M. EWT, NBC. "The World Today" news every weekday 6:45 P.M. EWT, CBS

**BUY  
WAR BONDS**

**GENERAL**  **ELECTRIC**



# FOR SAFETY

A NEW UNBREAKABLE HAND BLADE

**"LENOX"**

# Hackmaster

REG. U. S. PAT. OFF.

MOLYBDENUM HIGH SPEED STEEL

*Hackmaster*

This unbreakable hand blade has all the cutting qualities of the standard Molybdenum High Speed Blade. May be used under awkward sawing conditions or by inexperienced men with satisfaction and fast cutting speed.

Our shattering device shows the unbreakable feature of HACKMASTER on your desk top in 3 minutes. Write for demonstration.

AMERICAN SAW & MFG. CO.

SPRINGFIELD, MASS.



The Outgrowth of  
The First Bolt and  
Nut Plant  
in America — and  
Still Leading  
in Service and  
Quality

A complete line of  
Nuts, Bolts, Screws  
and Rivets.

Almost a Century of experience and  
proven worth.

WRITE

CLARK BROS. BOLT CO.  
Milledale, Conn.

**IRON HORSE  
BRAND**

**OILY WASTE CANS**  
Protect Your Plant  
From Fire



No. 18HO



No. 18FL

14 Gallon Capacity

Decrease fire hazards wherever oily and inflammable material is used. With or without foot lever. Approved by Underwriters' Laboratories, Inc. and Associated Factory Mutual Fire Insurance Companies.

**ROCHESTER CAN COMPANY**  
90 GREENLEAF ST. ROCHESTER, N. Y.

## FLOATING TOOL HOLDER



NEW floating tool holder is announced by Empire Tool Co., Detroit 13, Mich. More perfect correction of misalignment—both off-center and out-of-parallel is claimed for the tool. Being made of only five component parts, the moving parts riding on rollers so placed as to affect a perfect self adjustment, the holder is said to ream holes with close tolerances to absolute size and perfect roundness. Two sizes of body are available. The 2 1/2" body may be had with 1/2, 3/4, or 1 inch holes in choice of 1", 1 1/4", or 1 1/2" diameter shanks. The three inch body is made in 1, 1 1/4, and 1 1/2 inch holes with choice of 1 1/4", 1 1/2", 1 3/4", 2", 2 1/4" diameter shanks.

## STARTER ELIMINATES BLINKING LAMPS

NEW starter that eliminates blinking of fluorescent lamps and reduces current flow through lamp auxiliaries, is announced by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

The device interrupts the circuit when the lamp becomes deactivated or reaches the end of its life. It is fully automatic. When the burned out lamp is replaced, the starter resumes its normal lamp-lighting function. It is available for 40- and 100-watt lamps.

## ALL-WEATHER ARC WELDER



WILSON Bumblebee AC welders are now available in all-weather models of 300 and 500 ampere capacities. Welders have special moisture-proof insulation throughout, and all parts are protected by heavy coating of moisture-proof paint. They are equipped with a low voltage contactor which automatically holds the open circuit voltage at approximately 40 volts. Air Reduction Sales Co., 60 E. 42nd St., New York.

(Continued on page 142)

# It can be done— we're doing it!

*Despite the shortage of drop forging capacity, we're making more and more drop forgings every day—some with special tools and lots of ingenuity on flat die hammers. Those pictured are just a few of the thousands of shapes and sizes we've made by this method.*

Necessity is a powerful stimulus to creative ability—something that has always been encouraged among the steel craftsmen of Kropp Forge. When war's demands for drop forgings exceeded capacity, including our own, procedures and special tools were developed to produce as hammer forgings many parts which normally are drop forged.

These forgings, which can be produced within reasonable tolerances, include large and small parts such as gear blanks, large connecting rods, spindles, cams, levers, large crankshafts and other parts as illustrated. Recesses and bores are removed on the lathe, which is about the least expensive type of machine work today.

The flat die process can also be used most advantageously by those who have been machining parts from bar stock at excessive cost. Hammer forging will at least give those parts the general contour desired, and will endow them with the strength and stress resistance which only forging imparts to metals.

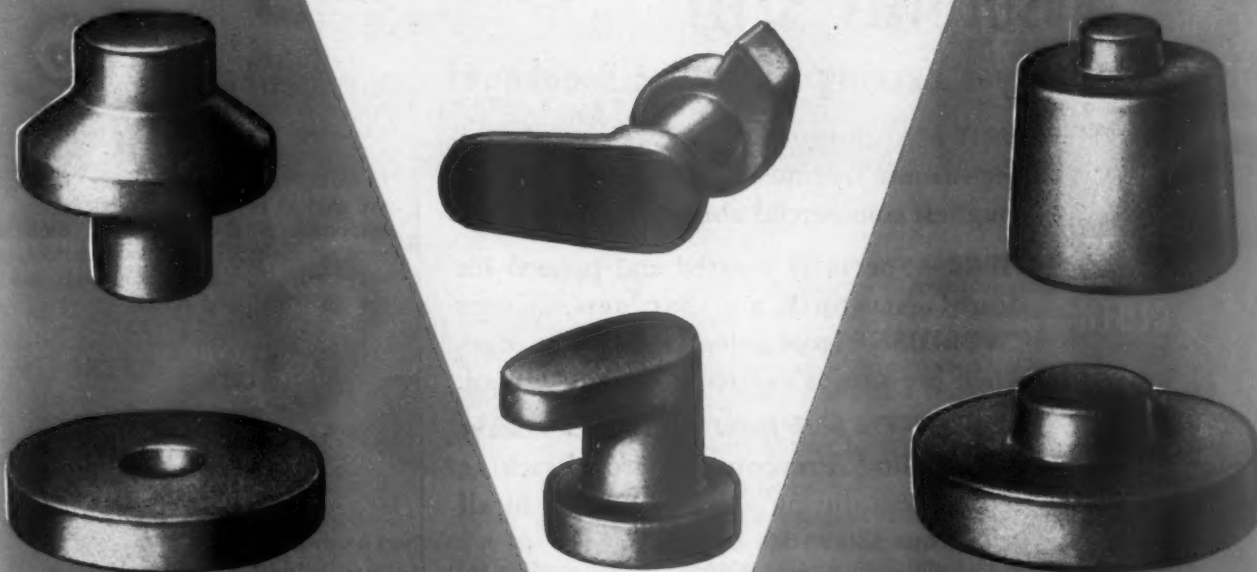
The completion of part of our war task has released certain flat die hammers for other essential production. Kropp Forge is performing the above services for many critical customers. For those who require both drop and upset forgings, hammer time is now available.

Call the nearest Kropp engineering representative, or write us regarding your requirements, sending blue prints and complete details.

## KROPP FORGE COMPANY

5301 W. Roosevelt Road, Chicago 50, Ill.

Engineering Representatives in Principal Cities



Makers of Drop, Upset and Hammer Forgings for Armament and Ordnance and Machinery of All Types

PROVED IN SERVICE . . . DOING A BETTER JOB FASTER!

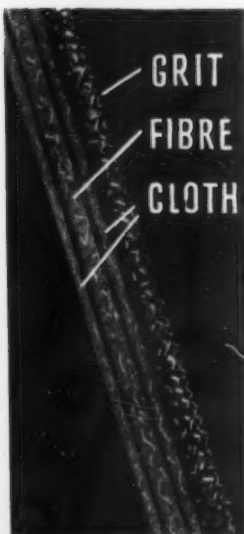
# New "WELDISK"

Specially Designed for Safe Weld Grinding and Other Heavy Grinding Jobs!



## ABSOLUTELY SAFE!

### Combination 3-Layer Backing Eliminates Breakage!



GRIT  
FIBRE  
CLOTH

**GRIT** — Aluminum Oxide . . . special electric furnace treatment makes it the hardest, toughest commercial abrasive in use today!

**FIBRE** — Specially treated and pressed for double-strength and hardness. Keeps "WELDISK" from going "flabby" on edges when pressure is exerted on grinding tool.

**CLOTH** — On both front and back . . . heavy drill quality! Prevents fibre from cracking as it is bent during grinding. Made in all grits from 320 to 16, inclusive.

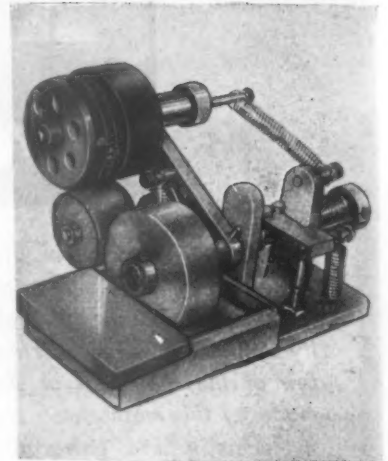
Abrasive Products, Inc., 523 Pearl Street,  
South Braintree, Massachusetts.



# Abrasive Products, Inc.

SOUTH BRAINTREE 65, MASSACHUSETTS • MAKERS OF JEWEL COATED ABRASIVES

## MARKING MACHINE



THE Rolaprinter is the name of an automatic rotary marker that imprints square, cylindrical, odd-shaped, or flat objects with a message, date, or legend. It uses either rubber, neoprene, or steel type, or solid dies. Marking roller carries the changeable type and is rotated by contact of bearer section with the piece being marked. Models can be supplied to mark on sides or top. Novel type of knee-action allows the marking roller to follow the curved or odd-shaped contours of the piece it is marking. Special inks available for marking metals, plastics, wood, etc.

## INNOVATION IN DIAMOND TOOLS

WHAT is said to be an innovation in diamond tools is announced by E. Karelsen, Inc., 125 W. 45th St., New

York, N. Y. It involves use of Permalloy—a new compound of metal alloy for mounting or setting the diamonds in tools, which does not subject the diamond to excessive heat in mounting. Diamonds are said to be held rigid indefinitely, irrespective of the heat when tools are used or the treatment to which tools are subjected. By its use diamonds can be reset without being ruined.

## WIRE STRIPPER



NEW model of the Speedex Wire stripper, incorporating an improved automatic stay-open feature, which is said to provide an important time-saving advantage when stripping the insulation from very fine stranded wire, is announced by Wood Specialty Mfg. Co., Rockford, Ill. It removes insulation from all types of solid or stranded wire without crushing over a wide range of sizes from No. 8 to No. 30. It can be used to cut wire.

(Continued on page 146)



## Eyes that see new worlds



**T**HE toy top which amused children at the turn of the century brought a new invention to America, an invention that is playing a vital part in the defense of democracy and in assuring freedom to the whole world.

Today, as the gyro-compass, the gyroscope which was inspired by the toy top, guides ships through trackless oceans unerringly to their destinations. As the gyro-pilot, it helps make possible the successful accomplishment of wartime missions by our mighty bombers. Gyro-stabilizers keep torpedoes fired from our submarines at proper depth—steer their course to targets as they blast enemy fleets from the seas.

Auto-Lite contributes to these Davids of modern war through the production of Sperry GYROPILOTS and Sperry Directional Gyros. It is just one of the ways Auto-Lite dependability and precision engineering is serving the Armed Forces of the United Nations in all 26 Auto-Lite manufacturing divisions.

SARNIA, ONT.

THE ELECTRIC AUTO-LITE COMPANY

TOLEDO, 1, OHIO

# AUTO-LITE





ATLAS BRASS FOUNDRY, INC. • • Los Angeles, Calif.  
 BADGER BALL & ROLLER BEARING • Milwaukee, Wis.  
 BOBKER BEARING COMPANY • • • Jersey City, N. J.  
 BOBKER BEARING COMPANY • • • • • Newark, N. J.  
 BURHANS & BLACK INC. • • • • • Syracuse, N. Y.  
 CANADIAN BEARING SUPPLY • Hamilton, Ont., Canada  
 CARTER, MILCHMAN & FRANK • • • New York, N. Y.  
 CROSS BROS. COMPANY, INC. • • • Rochester, N. Y.  
 CUTTER, WOOD & SANDERSON CO. • Cambridge, Mass.  
 HERR & COMPANY • • • • • Lancaster, Pa.  
 LINDQUIST HARDWARE COMPANY • Bridgeport, Conn.  
 S. H. POOLEY BELTING COMPANY • • • Buffalo, N. Y.  
 SLAYSMAN COMPANY • • • • • Baltimore, Md.  
 SMITH-COURTNEY COMPANY • • • • • Richmond, Va.  
 ST. LOUIS MACHINISTS SUPPLY COMPANY • St. Louis, Mo.  
 R. R. STREET & COMPANY • • • • • Chicago, Ill.  
 STRONG, CARLISLE & HAMMOND, • Cleveland, Ohio  
 TRANTER SUPPLY COMPANY • • • • • Pittsburgh, Pa.  
 TRISTATE CORPORATION • • • • • Philadelphia, Pa.

## THESE 19 DISTRIBUTORS HANDLE **BUCKEYE BEARINGS** to Serve You Better

● Buckeye's 1088 sizes of fully finished ready-to-use bearings,—156 sizes of semi-finished centered and rough machined maintenance bars, easily finished in a universal chuck,—and 256 sizes of rough bars, both in the popular 13" length introduced by Buckeye, that cut to size with a minimum of waste, are the proven answer to all but the most unusual industrial requirements. Regularly stocked by leading dealers in the outstanding industrial markets, these bearings reflect in every detail the advantage of Buckeye's exacting laboratory and metallurgical control, that assures the production of the uniformly high quality product. Each piece, month after month, measures up fully to Buckeye's exacting specifications. Send for the Buckeye stock cards and order Buckeye Bearings by name from the Buckeye distributors. A trial order will convince you.



# *Buckeye*

## BRASS AND MANUFACTURING COMPANY

6412 HAWTHORNE AVE.

BRONZESMITHS

SINCE 1900

CLEVELAND, OHIO



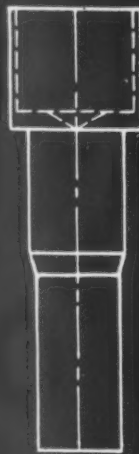
BRONZE SLEEVE BEARINGS • STANDARD SIZES OR TO CUSTOMERS' BLUEPRINT  
 IN ANY RECOGNIZED BEARING METAL ANALYSIS

# COST CUT 1/2...

By "NATIONAL" Cold Header Method



AUTOMATIC BLANK  
313 Lbs. per 1000 Pcs.



HEADER BLANK  
121 Lbs. per 1000 Pcs.

SAVING IN MATERIAL  
61%



Here's a short "short story" with a profitable ending:

**Chapter 1**—Alert executive reads "Savings" booklet, briefly describing 15 typical jobs in which "National's" cold heading methods cut costs, saved materials.

**Chapter 2**—Smart as well as alert, executive sends blueprints and samples of copper part to "National".

**Chapter 3**—"National" engineering service and production facilities succeed in producing part at *one-half the former cost* . . . material saving, 61 per cent.

Have you seen the booklet mentioned above? It may suggest a similar saving that you can make. A request on your letter-head will bring a copy to you. Just ask for the "Savings" booklet.



This booklet contains 15 brief, case histories of important savings on bolts, nuts, screws and special parts. Send for a copy of "SAVINGS".

**National**  
HEADED AND THREADED  
PRODUCTS

THE NATIONAL SCREW & MFG. CO., CLEVELAND 4, O.





## Knocking a chip off General Sherman's shoulder

### ...with an Armour Fibre Combination Sanding Disc!

**J**UST a hair-line scratch on a vital tank part can start a fatal fracture. Yet, in battle, every working part absorbs brutal punishment... must withstand the severest strains. That's why fighting American tanks... like the General Shermans... can not leave the factories until valves, gears, rods are ground to a glass-like smoothness.

From treads to turrets American tanks are fitted with a watchmaker's precision. Armour's Fibre Combination Sanding Discs are helping to *get* this flawless fit by polishing parts precisely and quickly!

Coated with hard, razor sharp aluminum oxide, Armour's Discs cut more evenly, with less heat, in less time! Aluminum Oxide's great strength and

keenness results from processing in electric furnaces.

You can depend upon Armour's Discs because each particle of grit is cemented... for keeps... to the cloth and fibre backing with a special Armour glue.

Find out... today... how Armour's full line of abrasives can help lick your production problems. Call your Armour branch or write to Armour Sandpaper Works, Chicago. We'd welcome the opportunity to talk with you about your abrasive problems—because we believe there's an Armour abrasive tailor-made to do a job faster and more efficiently.



## ARMOUR SANDPAPER WORKS

Division of Armour and Company

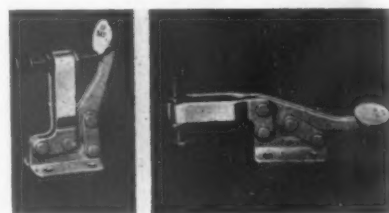
1355 WEST 31ST STREET • CHICAGO, ILLINOIS

### CORROSION-RESISTANT MOTOR



THE Crocker-Wheeler Division of the Joshua Hendy Iron Works, Ampere, N. J., announces the Sealedpower, corrosion-resistant motor. The motor is suitable for operation in atmospheres containing injurious dusts, corrosive vapors or gases, and excessive moisture. It is available in sizes from one to 15 hp. It can be furnished for operation from any polyphase power supply.

### HORIZONTAL TOGGLE CLAMP



NEW horizontal type toggle clamp is announced by Knu-Vise, Inc., Detroit, Mich., which is claimed to be the strongest clamp on the market for its size and weight. Known as model KP 835, it has a U-shaped bar which provides for the horizontal positioning of the pressure spindle and permits the clamping of many different things of varied thicknesses without disturbing the original location of the clamp. Clamp measures 6 in. in length when closed. It is cold rolled, cyanide hardened, and cadmium plated. Clamping action of the handle will multiply to a pressure of 550 lbs. at the pressure contact.

### LIGHT TORQUE WRENCH



NEW wrench for work on light assemblies and delicate products requiring accurate, low torque reading, is announced by Apco Mossberg Co., 136 Lamb St., Attleboro, Mass. The wrench is available in four sizes, to measure tension in ranges of 0 to 100 inch ounces, 0-30, 0-50, or 0-100 inch pounds. Torque is measured by the spread between two of several bars in the shank, giving a direct reading on a sturdy brass scale near the handle. Equally accurate with left or right hand treads, fits standard socket, and can be furnished in any square drive required. Weighs as little as 6 oz.

(Continued on page 148)



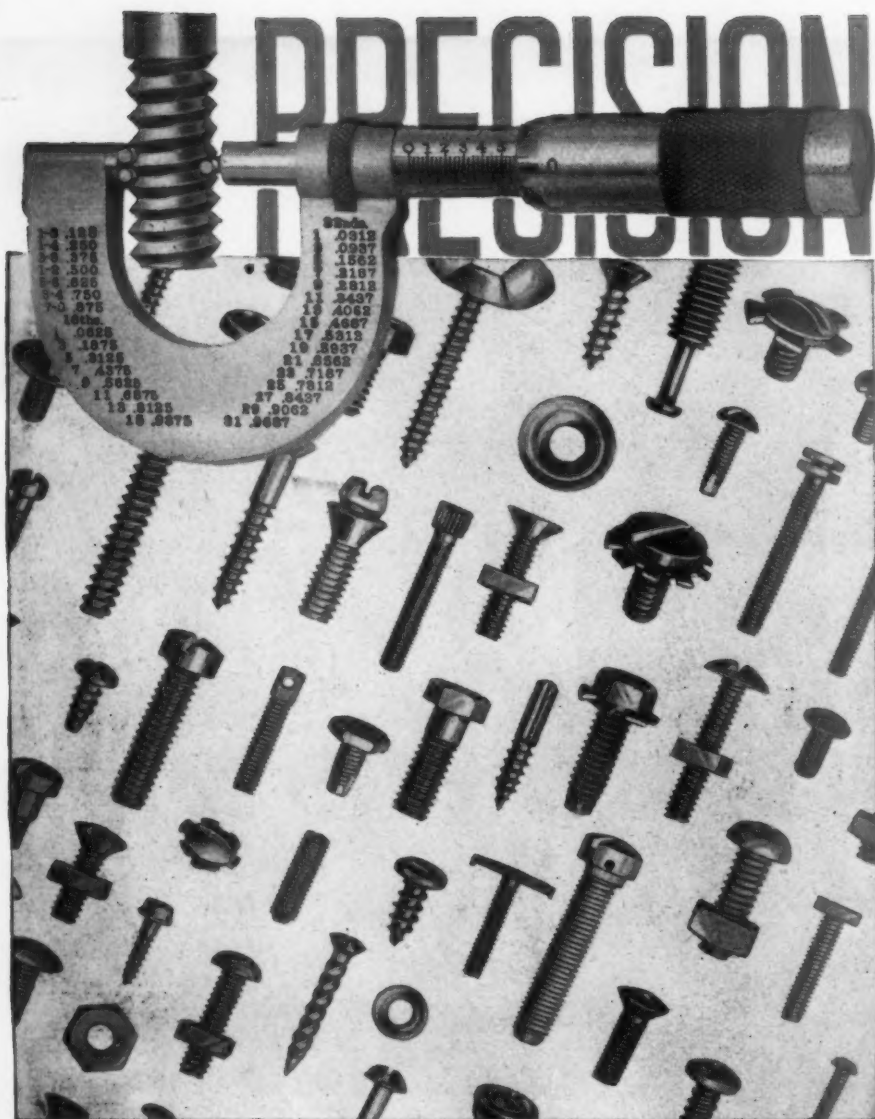
**EQUIPPING WORKERS** with the fastest, safest, most accurate tool *for every hand tool operation* inevitably results in better, faster workmanship. Tools poorly adapted to each specific application waste time, skill, energy. Everywhere in industry,

Snap-on tools are giving added efficiency to manpower in production, assembly and maintenance operations. Snap-on's direct-to-user tool service is available through 35 factory branches located in key production centers.

*Write for catalog of the complete Snap-on line*

**SNAP-ON TOOLS CORPORATION • 8048-C 28th Avenue • Kenosha, Wisconsin**





The war production requirements for precision in every mass produced unit of assembly are amply met by HOLTITE Screws, Bolts, Nuts and allied fastenings. Produced in great quantity with the uniform precision of small tools, these trouble-free units are gauged and inspected to strict standards of accuracy throughout every stage of manufacture. From metallurgically tested raw materials, through the wire processing mill (in our own plant), to final inspection, HOLTITE fastenings are fabricated by the most precise equipment in the industry.

Precision parts effect time-saving, reduce spoilage, and assure enduring, faultless service. Specify HOLTITE on your next order.

#### HOLTITE Recessed Head Screws & Bolts →

Cutting driving time an average of 50%, these production-boosting screws and bolts can be driven safely by spiral, electric and pneumatic drivers without danger of injury to material or worker.



# CONTINENTAL

## SCREW CO.

New Bedford, Mass., U.S.A.  
BUY MORE WAR BONDS

### DROP BOTTOM SKID BOX



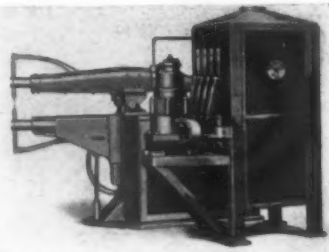
DROP bottom dump skid box designed and manufactured by the Union Metal Mfg. Co., Canton, Ohio, is said to speed up the materials handling job, and to effect substantial savings in both time and labor. The skid box is available in several sizes. In use it is carried at normal level to the point of unloading, lifted to top of hoist and back of box secured by loops to upper cross arm. Lowering the forks with the back of the box in this position dumps the load. The illustration shows the dump skid box being used with a Towmotor lift truck.

### HYDRAULIC PULLER REDUCES WORKTIME

SIMPLEX Jenny center hold hydraulic puller introduced by Templeton, Kenly & Co., 1020 So. Central Ave., Chicago 44, Ill., is said to

accomplish in minutes production, maintenance and repair jobs which normally require hours. Used for pulling utility service pipe, pulling bushings, cylinder lines, pistons, gears, sprockets, boiler tubes, etc., and to pull members together for welding or riveting. The simplex Jenny pulls, pushes or lifts. It can be rigged up as a portable press. Operates vertically or horizontally. Five models are available, 30 to 100 tons capacity.

### USES STORAGE BATTERIES



DIRECT current resistance welder using storage batteries as a source of welding current is announced by Progressive Welder Co., Detroit 12, Mich. Basic requirements are sufficient power to operate a battery charger. Other advantages reported are: Elimination of inductive losses in the welding "loop" by use of direct current; elimination of reactance losses between power supply and electrodes; less critical adjustments to get consistently good welds; and, greater operating and maintenance simplicity.

(Continued on page 150)



every scratch is fatal



Scratches are fatal because they mean rejections! In the case of bronze bearings and bushings for important war-time requirements, scratches occurred when these items came in contact with each other during various phases of production and shipment. The answer? An H & D war-time packaging development that provides positive product protection throughout the entire production and shipping cycle.

H & D Package Engineers are not only devoting much time to war-time packaging but are also turning their attention to the packages of tomorrow.

Post-war packages must receive the same careful planning as the products entrusted to them for safe arrival. Damaged deliveries never create customer good-will. So plan *now* for your post-war packages, and plan to use corrugated boxes that both protect and promote your products. H & D's vast storehouse of war-time packaging information is available now for planning peacetime packaging. Write today.

BUY WAR BONDS — YOUR SAFEST INVESTMENT

#### Tells HOW to PACK War Materials in Corrugated Boxes

The chief requirement in packaging war goods is to get as much essential material to specified destinations in the fastest, safest, most economical way. "How to PACK WAR MATERIALS in Corrugated Boxes" tells how H & D boxes are ef-



fecting new shipping efficiencies and economies in important war packaging assignments. Get copies of this and other H & D Little Packaging Library booklets by writing The Hinde & Dauch Paper Company, Executive Offices, 4423 Decatur St., Sandusky, O.

• • •

FACTORIES in Baltimore • Boston • Buffalo • Chicago  
Cleveland • Detroit • Gloucester, N. J. • Hoboken  
Kansas City • Lenoir, N. C. • Montreal • Richmond  
St. Louis • Sandusky • Toronto

For postwar packaging... better see

AUTHORITY ON PACKAGING . . .



**HINDE & DAUCH**

CORRUGATED SHIPPING BOXES



## COATING LAMINATING QUICK SERVICE



ADHESIVE TAPES  
COMBINING  
CLOTHS BACKED  
SKINS BACKED  
SACKING CLOTHS  
COATING  
LAMINATING  
RUBBERIZING

**ADHESIVE** and chemical mix coatings expertly applied to paper, cloth, foils and other materials.

Fabrics backed, laminated or combined to your specifications, and special purpose formulas developed in our own Laboratory.

65 years of "Know-How" deliver "Use-Proved" tapes and backings deserving the enthusiastic approval they earn on the production lines.

Just tell us what your problem is and let our Laboratory, backed by their years of specialized experience in synthetics, help you find the perfect solution.

Let Mr. George L. Peters, E.M., Columbia 1911, head of our Engineering Staff, suggest from our formulas those experience indicates as best suited to your particular needs.

# Peters Bros.

RUBBER COMPANY, INC.

160 160 JOHN ST., Brooklyn, N.Y.

ESTABLISHED 3 GENERATIONS

CHICAGO, ILL.  
H. Rabin, 30 No. LaSalle St.

LOS ANGELES, CAL.  
A. B. Boyd Co., 763 E. 14th St.

PETERSBURG, VA.  
Wm. A. Bragg, 224 No. Sycamore St.

PORTLAND, ORE.  
A. B. Boyd Co., S. E. Union & Morrison

SAN FRANCISCO, CAL.  
A. B. Boyd Co., 1235 Howard St.

SEATTLE, WASH.  
A. B. Boyd Co., 404 Dexter Ave.

ST. LOUIS, MO.  
C. E. Wilkins, 1602 Locust St.

WALLASTON, MASS.  
S. B. Scott, 123 Elm St.

CAPE TOWN, S. A.  
K. Stein Agency Co., 12 Plain St.

## NEW 3-TON LOWLIFT TRUCK



TYPE E-3 is the designation of a new 6000 lb. capacity low-lift truck announced by the Baker Industrial Truck Division of The Baker-Raulang Co., Cleveland, Ohio. The truck is designed for operation in intersecting aisles 67" wide; has an overall length of 123 3/4", width of 42 3/4", and height of 55". Platform is 26 1/2" wide, 54" long, and 11" high in the low position and has a vertical lift of 6". Truck travels 4 1/2 miles per hour with full load or 6 miles per hour empty on a level floor.

## MAXITORQ FLOATING DISC CLUTCH

MANUFACTURER states this disc clutch offers new improvements in clutch construction. These

include floating discs, manual assembly and manual adjustment. Single type and double type clutches are available. Both single and double types are furnished with either wet or dry disc construction. No tools are necessary to take apart or assemble the Maxitorq. Adjustment for disc wear is made by turning a knurled adjusting ring which is locked by a spring.

## SPECIAL PURPOSE MACHINE



THIS special-purpose machine was developed by Snyder Tool & Engineering Co., Detroit 7, Mich., for reaming, counterboring and left and right hand tapping aircraft crankshaft sections after assembly. The machine is built in three sections—a central section carrying the fixture and two end-sections carrying spindles, drives and slides. Each end is in effect, an individual machine performing a complete set of operations upon one end of the workpiece. Thus both ends of the workpiece are processed simultaneously with but one loading and unloading operation. Slides for reaming and counterboring have hydraulic feed while tapping is by a lead screw after hydraulic rapid approach. Each tool and operation has its own individual lever setting on the drive unit and the machine automatically selects the correct speed and depth for each tool throughout the automatic work cycle.

(Continued on page 154)

## TECHNICALLY CORRECT

Dayton wheels . . .  
manufactured to  
exact specification.  
Made in all types,  
sizes, grains, bonds  
and grades.

SIMONDS WORDEN  
WHITE CO.  
DAYTON, OHIO



## DAYTON

GRINDING WHEELS

## Steel TAPER PINS

Meet All  
Army and Navy Specifications  
Prompt Delivery  
Accurate and Uniform  
No special fitting necessary  
with these taper pins.

All inquiries receive immediate  
attention

## MACHINE SPECIALTIES

Designers and Builders  
of Special Machinery

4029 N. Kedzie Ave.  
Chicago 18, Ill.



PREWAR EFFICIENCY FOR LIGHTING SYSTEMS



**ALZAK** *Aluminum Reflectors*

(REG. T. M.)

Improved lighting, obtained with Alzak Aluminum Reflectors is definitely constructive and important to war industries. Better light means better sight which, of course, means increased efficiency—more materiel for our armed forces. Using aluminum requires no more man-hours of labor; may even save on fabricating and installation time.

Let's review the advantages offered by Alzak Aluminum: Reflecting surfaces meet the requirements of every lighting job, diffuse or specular, and combinations of the two. Reflec-

tor shapes can be exactly what are needed for putting light where you want it; aluminum places no limitations on reflector shapes. The glass-like hardness of the Alumilite finish (process patented) makes cleaning easy, assures long life with continued high efficiency.

Alcoa does not make reflectors, only the aluminum sheet from which reflectors are formed. Ask your regular manufacturer of lighting fixtures about Alzak Aluminum Reflectors for essential war uses.

ALUMINUM COMPANY OF AMERICA, 1931 Gulf Building, Pittsburgh, Pennsylvania.

**ALCOA**

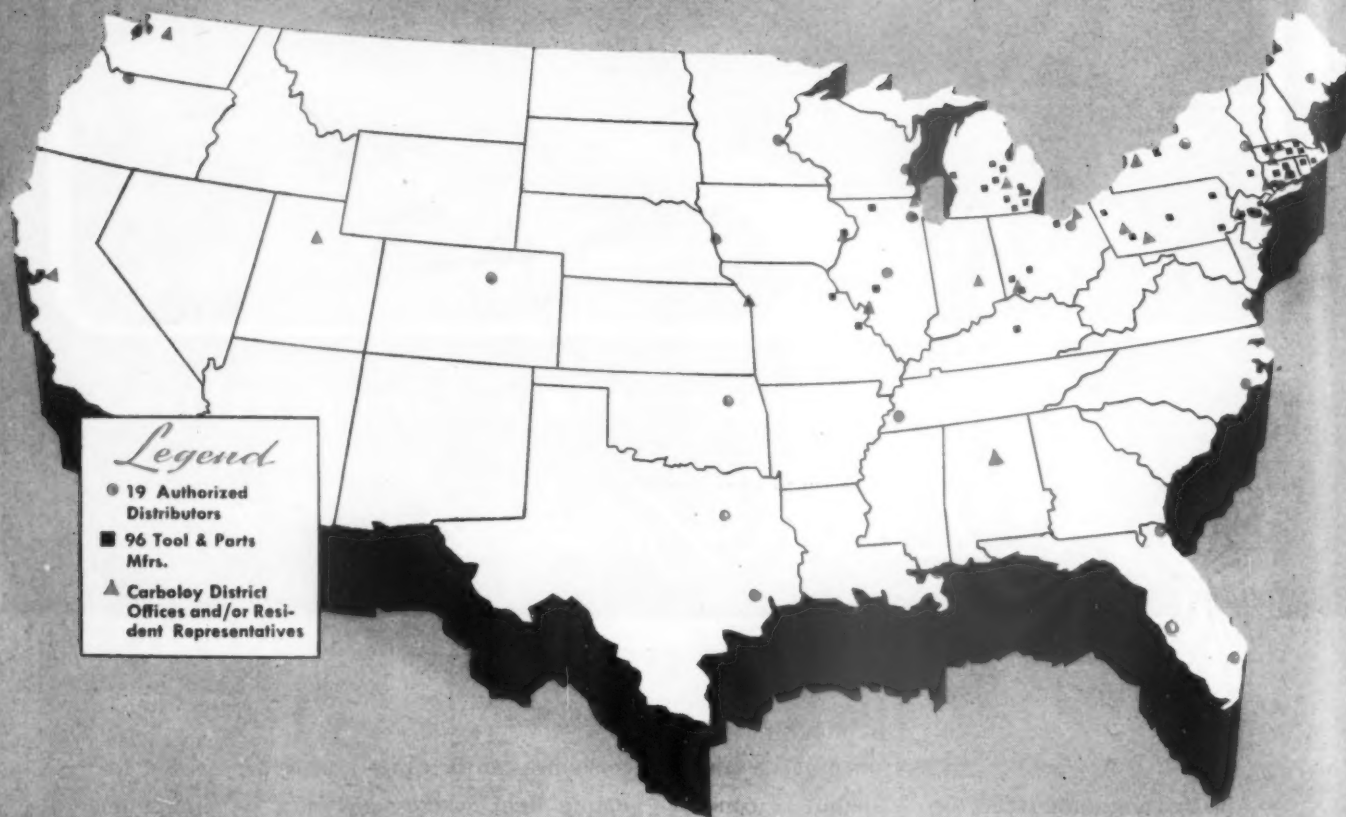


**ALUMINUM**



# C Coast to Coast

## GUIDE TO AND PARTS



**C**EMENTED CARBIDES manufactured by Carboloy Company are available to you under this nationwide 3-way plan of distribution that provides maximum service and availability throughout the entire range of carbide use:—


1. *Through Distributors:* Authorized distributors in important metal-working areas carry stocks of Standard Carboloy Cemented Carbide Tools, Blanks, Dressers and Masonry Drills and offer complete technical service through factory-trained representatives.

2. *Through Tool Manufacturers:* Leading tool

and parts manufacturers are authorized to supply their products, covering practically all types of special—often patented—tools, cutters and gages, as well as many miscellaneous parts—equipped with Carboloy Cemented Carbides.

3. *Direct Carboloy Service:* Direct service by Carboloy Company is provided by a large staff of experienced sales and service engineers operating throughout the country.

Put this comprehensive system of service and supply to work for your plant. Specify "Carboloy" for your cemented carbide requirements.

Look for the trademark CARBOLOY (or the trademark ) on the tools you buy. It is

# Service AND Supply

## AUTHORIZED SOURCES OF TOOLS TIPPED WITH GENUINE CARBOLOY

### 19 Authorized Distributors Providing Local Service & Supply.

The Cameron & Barkley Co.	Charleston, S. C.
Branches at Jacksonville, Tampa and Miami, Fla.	
G. F. Cotter Supply Co.	Houston, Texas
J. E. Dilworth Co.	Memphis, Tenn.
Dumeer & Schroeder, Inc.	Milwaukee, Wisc.
The John C. Elide Co.	Minneapolis, Minn.
Empire Machinery & Supply Corp.	Norfolk, Va.
Fuchs Machinery & Supply Co.	Omaha, Nebr.
General Carbides Co.	Newark, N. J.
J. E. Haseltine & Co.	Portland, Ore.
Harold W. Kimball Co.	Waterville, Me.
Machinery Sales & Supply Co.	Dallas, Texas
Marshall Supply & Equipment Co.	Tulsa, Okla.
The Mine & Smelter Supply Co.	Denver, Colo.
Murray-Baker-Frederic, Inc.	New Orleans, La.
A. N. Nelson, Inc.	Brooklyn, N. Y.
Sager-Spuck Supply Co., Inc.	Albany, N. Y.
Screw Machine Supply Co.	Chicago, Ill.
Strong, Carlisle & Hammond Co.	Cleveland, Ohio
Syracuse Supply Co.	Syracuse, N. Y.

### 96 Leading Tool and Special Part Mfrs. Authorized to Supply Their Tools, Cutters, Gages and Parts Equipped with Carboloy Cemented Carbides.

Allen Gauge & Tool Co.	Pittsburgh
B. C. Ames Co.	Waltham, Mass.
Anderson Bros. Mfg. Co.	Rockford
Apex Tool & Cutter Co.	Shelton, Conn.
Archer & Smith, Ltd.	Lexington, Ky.
Associates Machine Co.	Detroit
Bacharach-Strauss Co.	Pittsburgh
Barber-Colman Co.	Rockford
Barrett Equipment Co.	St. Louis
Bokum Tool Co.	Detroit
Bridgeport Ground File Co.	Bridgeport
Carbide Fabricators, Div. Morse Tool Co.	Royal Oak, Mich.
Chicago Latrobe Div., United Twist Drill & Tool	Chicago
Carbide Tool Mfg. Co.	Los Angeles
Carey-McFall Co., Inc.	Philadelphia

Cleveland Cutter & Reamer Co.	Cleveland
Cleveland Twist Drill Co.	Cleveland
Central State Tool Co.	Chicago
Cogedill Twist Drill Co., Inc.	Detroit
Cole Carbide Industries	Royal Oak, Mich.
Cornell Tool Co.	Centerline, Mich.
Arthur A. Crafts Co., Inc.	Boston & Chicago
Criterion Machine Works	Beverly Hills
Davis Boring Tool Co.	St. Louis
Dawson Carbide Industries	East Detroit
Detroit Boring Bar Co.	Detroit
Henry Dieston & Sons, Inc.	Philadelphia
Eclipse Counterbore Co.	Detroit
Elliott Mfg. Co.	Milford, Conn.
Ex-Cell-O Corp.	Detroit
M. A. Ford Mfg. Co.	Davenport, Iowa
C. J. Forthman	Cincinnati
Gairing Tool Co.	Detroit
General Tool & Die Co.	E. Orange, N. J.
Genesee Tool Co.	Fenton
Giern & Anholtt Tool Co.	Detroit
Goddard & Goddard Co.	Detroit
Gorham Tool Co.	Detroit
Hartley Wire Die Co.	Thomaston, Conn.
Harrington Tool Co.	Detroit
Illinois Tool Works	Chicago
Ingersoll Milling Machine Co.	Rockford
Kelly Reamer Co.	Cleveland
Lake Shore Tool Works, Div. Carbide Tool	Chicago
Lincoln Park Tool & Gage	Lincoln Park, Mich.
Lovejoy Tool Co., Inc.	Springfield
Machinery Mfg. Co.	Los Angeles
Madison Mfg. Co.	Muskegon, Mich.
McCrosky Tool Corp.	Meadville, Pa.
McGill Carbide Tool Co.	Detroit
Metro Tool & Gage Co.	Chicago
Midwest Tool & Mfg. Co.	Detroit
W. W. Mildrum Jewel Co.	E. Berlin, Conn.
Moslo Machinery Co.	Cleveland
Morse Twist Drill & Machine Co.	New Bedford, Mass.
Motor Tool Mfg. Co.	Detroit
M. & M. Tool Co.	Farmington, Mich.
National Tool Co.	Cleveland
New England Carbide Tool Co.	Cambridge, Mass.
O. K. Tool Co.	Shelton, Conn.
Ohio Knife Co.	Cincinnati
J. S. Popper, Inc.	Union City, N. J.
Precision Boring Tool Co.	Lansing
Production Tool Co. of America	Detroit
Reeder Carbide Tool Co.	Detroit
R. & M. Mfg. Co.	Royal Oak, Mich.
Scully Jones & Co., Inc.	Chicago

Service Carbide Tool Co.	Ferndale, Mich.
Sheffield Corp.	Dayton
Severance Tool Industries, Inc.	Saginaw, Mich.
Ralph Shipman	Sunbury, Pa.
Simonds Saw & Steel Co.	Fitchburg, Mass.
Landon P. Smith, Inc.	Irrington, N. J.
Sommer & Maca Corp.	Chicago
Sprague & Henwood, Inc.	Scranton, Pa.
Standard Gage Co., Inc.	Poughkeepsie
Standard Tool Co.	Cleveland
Staples Tool & Eng., Co.	Cincinnati
L. S. Starrett Co.	Athol, Mass.
State Mfg. & Const. Co.	Franklin, Ohio
Super Tool Co.	Detroit, and Glendale, Calif.
Swedish Gage Co. of America	Detroit
Tool Specialty Co.	Los Angeles
Trubor Tool Co.	Yonkers, N. Y.
Taft-Pierce Mfg. Co.	Woonsocket, R. I.
Tungsten Carbide Tool Co.	Detroit
Universal Eng., Co.	Frankenmuth, Mich.
Van Keuren Co.	Boston
Harry W. Wagner Co.	New York
Walken Tool Co.	Cleveland
Weddell Tools, Inc.	Rochester
Weich Industries, Inc.	Detroit
Wendt-Sonis Co.	Hannibal, Mo.
Wesson Co.	Ferndale, Mich.
Wetmore Reamer Co.	Milwaukee
N. A. Woodworth Co.	Detroit

**Plus** . . . Direct service  
from Carboloy Com-  
pany, Inc., through  
Carboloy sales and service engineers  
operating throughout the nation.

### CARBOLOY COMPANY, INC.

Main plant and offices:

**11191 E. 8 Mile Rd., Detroit, Mich.**

#### BRANCH SALES & SERVICE OFFICES

BIRMINGHAM 3, ALA. CHICAGO 7 CLEVELAND 4  
DETROIT 32 LOS ANGELES NEWARK 2, N. J.  
PHILADELPHIA 22 PITTSBURGH 19  
SEATTLE 4, WASH. THOMASTON, CONN.

# CARBOLOY

TRADEMARK



TUNGSTEN CARBIDES ★ ★ ★ TUNGSTEN CARBIDES WITH TANTALUM AND/OR TITANIUM CARBIDES

your assurance of Authorized Service and Genuine Carboloy Cemented Carbide

# Here's Skilled Lighting



**Wheeler Vapolux Fixtures.** Made in standard styles for 100 to 500 watt lamps. All joints dust-tight. Scientifically balanced heat dissipation. High light output.

**Wheeler Globe-Type Fixtures.** Dust-tight and vapor-proof. Made in standard styles for 75 to 200 watt lamps. Same high safety and lighting standards as Vapolux unit.



## for Class II, Group G Locations!

In lighting fixtures for hazardous locations, the advantages of Wheeler "Skilled Lighting" show up even more outstandingly than in more common types of reflectors.

Wheeler Vapolux and Globe-Type Fixtures comply with all requirements necessary or desirable in class II-G locations. Also, they give you the high measure of light output, durability and ease of installation and maintenance that can only come from better engineering, backed by long experience. In every detail, Wheeler Lighting is "Skilled Lighting" developed with the experience of over 62 years' specialization!

Write for complete Catalog 50 containing full details of these high-efficiency, high-convenience units for Class II, Group G locations. Wheeler Reflector Company, 275 Congress St., Boston 10, Mass. . . . New York City. Representatives in principal cities.

*Distributed Exclusively Through Electrical Wholesalers*

# Wheeler REFLECTOR COMPANY

Lighting Equipment Specialists Since 1881

## NEW TAPPING MACHINE



NEW high-speed automatic tapping machine which will tap a class 3 fit on a production basis has been developed by the Cleveland Tapping Machine Co., 1725 Superior Ave., Cleveland, Ohio. The machine is made in two sizes, the smaller with 4 speeds, and the larger, which has a four-speed transmission, with 16 speeds. The latter has a four-step pulley, affording a speed range from 35 rpm to 350 rpm.

## COOLANT DELIVERED IN TWO STREAMS

**SPECIAL COOLANT** system designed for Rogers vertical turret mills permits the delivery of two streams

of coolant to the tool and the work through flexible tubing. Pump is driven by fractional hp motor; it is self-contained, all enclosed and self-priming. Pump starting switch is connected with the main switch. Coolant flows back to the lowest point on the frame where it is picked up, cleaned and recirculated. Rogers Machine Works, Inc., Buffalo 7, N. Y.

## CONTROLS LIQUID LEVEL

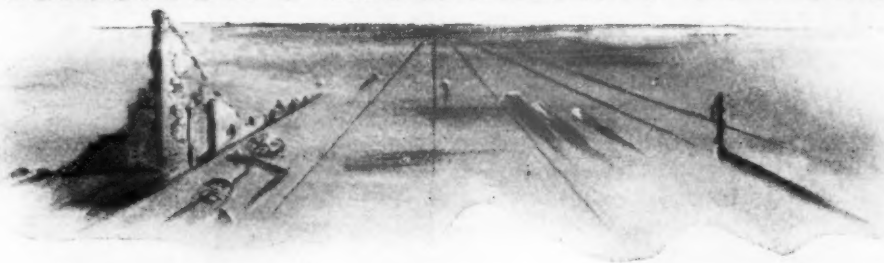


With the announcement of its new Level-Buoy the Taylor Instrument Cos., Rochester, N. Y., adds to its line a buoyancy-type instrument which both controls and indicates liquid level. It handles liquids with specific gravities between .2 and 2.0, and is available in the following standard ranges: 14", 32", 60", 72" and 120".

(Continued on page 156)



# Tomorrow's Instruments of Peace



## ON THE HORIZON

—perhaps nearer than we realize—loom the industrial problems of peace—when all this war effort must be reconverted back to the business of supplying civilian needs. With stocks of implements and equipment for home and commercial use reduced to a level of scarcity unknown in our lifetime, the demand for replacements and new products will present a staggering assignment and a great opportunity.

## IN WAR AS IN PEACE,

G. I. is today maintaining its leadership in the volume production of Precision Variable Condensers, Automatic Tuning Mechanisms and other electronic items for our armed forces. But our thoughts and plans are reaching forward to that day when G. I. will again supply, in prodigious quantities, new products of improved designs for the Instruments of Peace.



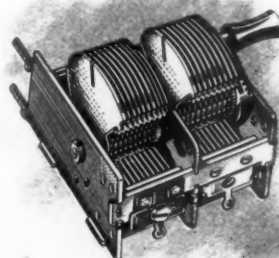
**General  
Instrument**

The First in our  
Industry to be  
So Honored



CORPORATION

829 NEWARK AVENUE • ELIZABETH, N. J



# That Resource You're Seeking may be in FAIRCHILD'S INDUSTRIAL TEXTILES DIRECTORY

1944 Edition **\$2** A Copy Prepaid

As in former years, this Directory — the only one in the field — is sponsored by the Textile Division of the National Purchasing Agents Association.

The completeness of the classifications may be judged by the fact that resources of Cotton Textiles run alphabetically all the way from Basket Weaves to Wiping Cloths . . . Finished Cotton Goods, from Awning Stripes to Whipcords . . . and the same comprehensiveness applies to resources of Cotton Yarns and Rayon Textiles.

Besides, the listings include cloth brokers, cotton textile finishers, job printers, testing laboratories, textile engineers, etc., etc.

Only one edition can be printed of the 1944 Industrial Textiles Directory — and that will be limited by the prepaid advance orders received. Hence the advisability of making sure now of your copy or copies by sending in \$2 for each (plus 1% sales tax if delivered in New York City).

## QUICK FACTS

about 1944

Fairchild's

Industrial

Textiles Directory

Only Directory in its field.  
Durable paper, substantially bound.  
Convenient filing size.  
Alphabetically arranged by classifications.  
\$2 a copy prepaid.  
Only one edition will be printed.  
Immediate reservation of copies necessary to avoid disappointment.

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Circulation Department,  
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Please send us on publication ..... copies of Fairchild's Industrial Textiles Directory for 1944. Payment of \$..... at \$2 a copy enclosed. (Add 1% sales tax if delivered in New York City.)

Name ..... Firm .....

Address ..... City ..... P. O. Zone ..... State .....

## CARBIDE GAGE BLOCKS



CARBLOX is the name of new line of cemented carbide gage blocks introduced by the Lincoln Park Tool & Gage Co., Lincoln Park 25, Mich. Manufacturer states that the new blocks greatly reduce the wear error in gage block use. The units are practically non-magnetic and highly resistant to rust or corrosion. They are furnished to "A" accuracy (.000004") and "A" accuracy (.000008") as a series of gage block build-up or as individual blocks when a build-up is not required.

## LEAKPROOF CORRUGATED FIBRE CONTAINER

FIBRE drum for liquid products, designed to meet ICC specification 12L, to hold 5 gallons of inflammable paints,

has been developed by the Paramount Container Co., 551 5th Ave., New York, N. Y. It consists of container with an outer shell, which can be made water repellent. No special machinery is required to set up the container. The drums are hexagonal in shape, and pile with minimum of space wastage.

## MAGNETIC COMPARATOR



NEW Magnetic comparator for controlling the quality of ferrous parts of the same size and shape, is announced by Special Products Div. of General Electric Company. When the part to be tested is placed in a coil which has been balanced electrically against a standard part, the new comparator detects any difference in the two parts which changes the magnetic flux linking the coils surrounding them. Differences may be caused by wrong composition, improper heat treatment, hardness, size, or other properties which affect the magnetic flux of the coil. The comparator is sufficiently sensitive to distinguish between steels whose hardness varies as little as two point Rockwell when hardness difference is the sole variable.

(Continued on page 158)

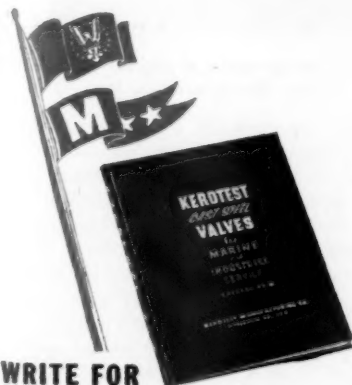


**A dependable source of supply for  
Industrial Steel Valves**

★ ★ ★ handling fluid for any pressures  
from 150 to 1500 pounds...in alloys  
to established standards, or to your  
own specifications ★ ★ ★

**WITH COMPLETE DEPENDABILITY  
AND DURABILITY...**

*Always*



**WRITE FOR**

*Do you have the Kerotest Cat-  
alog in your reference files?*

**KEROTEST MANUFACTURING COMPANY**  
Pittsburgh, Pennsylvania



★ ★ ★ ★ ★

*WORK CLOTHES DESIGNED EXCLUSIVELY for Women*



*Smart Work Clothes*

**AVAILABLE QUICKLY!**

Don't let women workers don makeshift clothing when Moore Victory Uniforms are so easily available... so safe to work in and so moderately priced. Full-cut, tested in action for comfort and safety, Moore work clothes are made exclusively for women and are therefore flatteringly feminine. Get illustrated style book showing smart slack suits, coveralls, work dresses now made up for you quickly, with our increased production facilities, in a choice of Sanforized-shrunk materials. Also Moore Victory Headwear and Insignia—at remarkably low prices.



Write for Illustrated  
Style Book. PM2

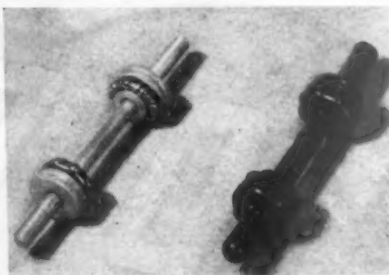
**E. R. MOORE** *Company*

932 Dakin Street  
Chicago 13, Illinois

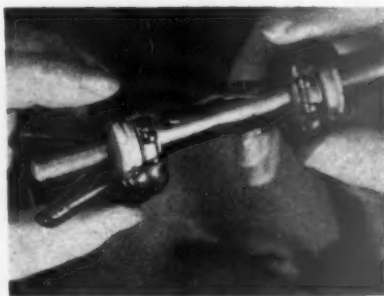
#### PLASTIC COATING FOR PROTECTING PARTS

A new method of preparing metal parts for export shipping, is being offered to industry by the Japan Company, 5103 Lakeside Avenue, Cleveland, Ohio.

Parts are coated with an ethylcellulose plastic material which encases them with a tough, cohesive film, making air or moisture penetration impossible. No re-wrapping and no use of paper or similar materials is involved.



A tough protective coat



Easily and cleanly peeled off

Once coated, the parts can be boxed for shipping without delay. Tests show that the plastic casing will withstand the attacks of salt air, salt water, high humidity, heat-cold extremes, abrasion and other severe hazards of wartime shipping as well as or better than previously used processing materials. Advantages may be summed up as follows:

1. The rapid application.
2. Toughness of coating provides greater mechanical protection.
3. High melting point gives protection from any normal extremes of temperature such as those induced by tropical sun or ship boiler rooms.
4. Coating is not embrittled or otherwise adversely affected by sub-zero temperatures.

Although the plastic film fits the treated parts like a skin, it can be stripped off in a few seconds simply by slitting it from top to bottom with a pocket knife.

#### LOADING AND REINFORCING WAR SHIPMENTS

Shipping food, naval shells, army trailers, logs and many other war and essential civilian products is illustrated and discussed in the current issue of Acme Process News, No. 15. Shippers of all types of products will find the fact-crammed pages both interesting and profitable reading. Free copies may be obtained by writing Acme Steel Co., 2840 Archer Ave., Chicago 8, Ill.

#### ELECTROLYTIC ZINC COATED SHEETS

Using the same electrolytic lines that have revolutionized production of tin plate, Weirton Steel Co., Division of the National Steel Corp., Pittsburgh, Pa., is now turning out electrolytic zinc coated sheets at the rate of 160 ft. a minute in its new plant at Weirton, W. Va. The lines are designed to coat sheets up to 38" wide, from 0.0080-in. to 0.0370-in. gage (39 to 21 zinc gage) and coated from 0.1 ounce to 0.2 ounce per square foot on both sides. The product is marketed in coils or cut lengths down to 3/8" narrow strip. Most of the production is now being processed into ends for fiber shell canisters and ammunition containers. List of suggested items for which electrolytic zinc coated sheets and strip may be used include hot air conductor pipe and elbows, oil cans, spools and reels, Venetian blinds, furniture, moulding, expanded metal lathe, lamps, builders hardware, flexible hose and shafting and fiber box reinforcements. The product can also be used to replace stampings now made from cold rolled sheets and coated after forming.

1 1 1

#### SPECIAL NAVY MOTOR GETS SEVERE WATER TESTS

The United States Navy needed a special water-proof electric motor for driving the cams of a multiple-barrel gun. Rated 1/3-hp, the induction motor was built to Navy specifications and was required to operate after being squirted with a one-inch jet of water from a distance of ten feet. Westinghouse engineers evolved the water-proof design through use of a labyrinth-type seal having appropriate traps and drains. The



One inch jet of water is played on motor from a distance of 10 feet.

seal uses no packing to cause friction nor rubbing metal parts to wear out.

In addition to being water-proof, the motor must withstand two 2000-foot-pound blows from each of the three directions. To prove beyond doubt that these motors are well able to meet the severe Navy demands, engineers subjected one motor to an additional shock test. After subjecting the motor to a total of 150 such blows and finding no evidence of fatal injury, the test was stopped.

(Continued on page 162)

# VETERAN!



Unretouched photo of a National milling cutter after long and hard service. Because of regular resharpenering this cutter lasted far beyond its normal life expectancy.

Hours can be added to the useful life of cutting tools by a policy of regular resharpenering. Sharp tools last longer, produce more and better work.

## NATIONAL



### TWIST DRILL AND TOOL COMPANY

HOME OFFICE AND FACTORY—DETROIT, MICH.

Tap and Die Division—Winter Brothers Co., Wrentham, Mass.

Factory Branches • New York • Chicago • Cleveland • San Francisco • Distributors in Principal Cities

TWIST DRILLS  
REAMERS, HOBS  
MILLING CUTTERS  
COUNTERBORES  
SPECIAL TOOLS



## Electric Motor Bearings

### *Catalogue*

72 Pages listing and describing the most complete bearing service available. Electric Motor Bearings are illustrated. Write for your copy TODAY.

The performance and the service that you gain from your electric motors depends to a very great extent on the bearings you install. Quality should be your first thought when purchasing bearings—either for new equipment or for replacement.

Johnson Electric Motor Bearings are the highest quality available. Cast in a special high lead bronze alloy they deliver the smoothest performance for the greatest period of time. The plastic quality of this alloy permits a reasonable amount of overloads, misalignment, and prevents grit from scoring the shaft.

Johnson Electric Motor Bearings are usually available from stock for over 250 different types of motors. Each bearing is completely machined to the correct tolerances . . . ready for immediate installation. Oil holes, slots or grooves are in accordance with the requirements of the motor.

The next time you need bearings, specify Johnson Bronze. Test them in comparison with any you have ever used. See for yourself the extra service and performance you gain.

**JOHNSON**

SLEEVE BEARING

450 S. MILL STREET



**BRONZE**

HEADQUARTERS

NEW CASTLE, PA.



# Startling Results

with the New

## DoALL Buttress

Patent Applied For

### SAW BAND



**Note!**  
**WIDER**  
**SPACED**  
**TEETH**

**TODAY'S FASTEST CUTTING SAW**  
For Wood, Plastics, Laminated and all  
Coarse Texture Materials

It was first developed in 1941 in our research laboratory for special jobs and has now been perfected to meet the wartime need for stepping up production. Fits any band saw and turns out an unprecedented amount of work.

**NO SHARPENING REQUIRED.** That means no work stoppages, which is something important to consider when you're working against time. Use the DoALL Buttress until it's worn out, then just thread in a new saw.

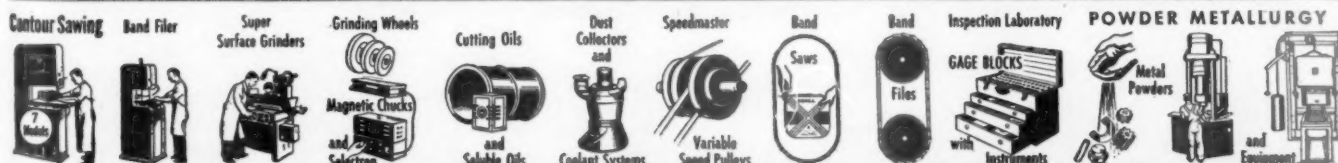
The DoALL Buttress not only does an extraordinary job, but costs no more than an ordinary saw band. Comes in widths up to 1" and in several pitches.

*You'll want to know all about this amazing advance in saws. Consult your local DoALL man.*

#### Recent Record-Breaking Reports

- 400% increase in cutting plasterboard.
- By using the DoALL Buttress Saw, we expect to eliminate one complete shift. Two shifts will do the work now done by three.
- We now spend 20% of what we used to for blading. 9,500 feet of DoALL Buttress blading does the work of 25,000 to 30,000 feet of blading formerly used.
- Laminated paper bomb rings: 135 square inches cut per minute.
- Wood ripping record with DoALL Buttress Saws:
 

Birchwood	372.75 square inches per minute
Gumwood	744.50 square inches per minute
Red Oak	621.25 square inches per minute
Yellow Pine	413.75 square inches per minute



# DoALL

INDUSTRY'S NEW SET OF TOOLS

Write for Literature, mentioning products  
in which you are interested.  
**THE DoALL COMPANY, 1205 Thacker St., Des Plaines, Ill.**

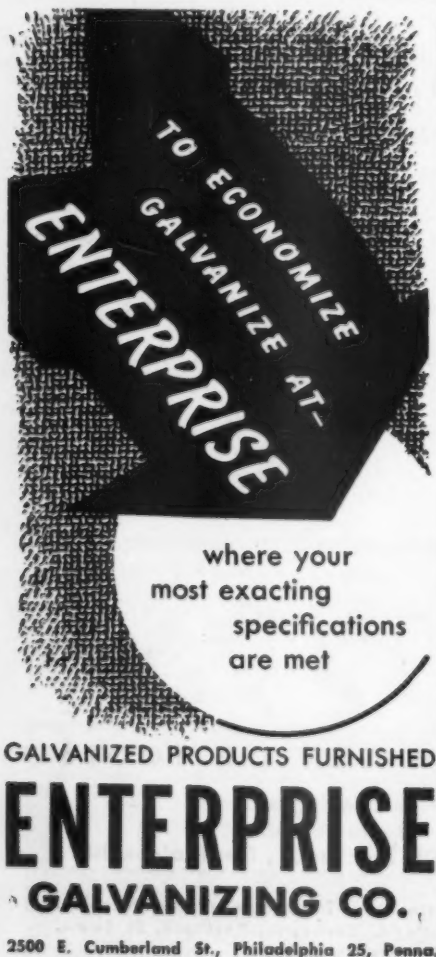
Sales & Service Offices: Baltimore, Boston, Chicago, Cleveland, Denver, Detroit, Erie, Houston, Indianapolis, Los Angeles, Milwaukee, Minneapolis, New Orleans, New York, Orlando, Philadelphia, Pittsburgh, Portland, Rochester, Rockford, St. Louis, Salt Lake City, San Francisco, Seattle, Spokane, Toledo, Tulsa, West Hartford.



**BEARING LOCKNUTS**  
N 00 TO AN 40  
★  
STANDARD  
★  
HEAVY DUTY  
★  
SPECIAL  
★

**Vital Links in  
modern Production**

**ALLIED MACHINE &  
ENGINEERING CORP.**  
NEW PHILADELPHIA, OHIO

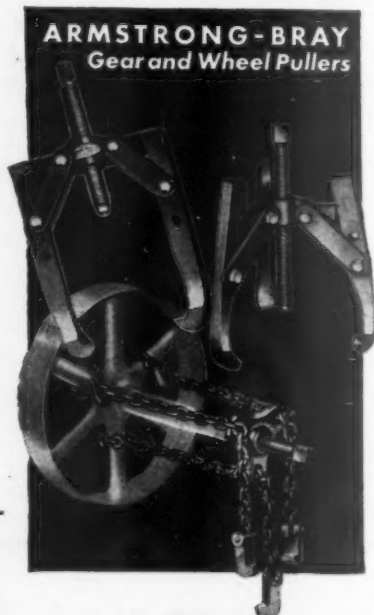


**TO ECONOMIZE  
GALVANIZE AT-  
ENTERPRISE**

where your  
most exacting  
specifications  
are met

**GALVANIZED PRODUCTS FURNISHED**  
**ENTERPRISE**  
**GALVANIZING CO.**

2500 E. Cumberland St., Philadelphia 25, Penna.



**PROMPT SHIPMENT FROM STOCK  
— ESSENTIAL TOOLS TODAY**

because they save hours of time, prevent costly breakage and long shut downs.  
**STEELGRIP** Standard Rigid Arm Gear and Wheel Pullers are of improved design. Will not slip from work. Arms are forged and heat-treated. 2-arm, 3-arm and special models. 12 types and sizes.  
**CHAINGRIP** Universal Pullers pull wheels, solid gears, pinions etc., even at considerable distance from end of shaft. Proof-tested chains have both chain hooks and special pulley hooks. .3-ton and 12-ton capacities.

Write for Catalog Sheets.

**ARMSTRONG-BRAY & CO.**

"The Belt Lacing People"

5378 Northwest Highway, Chicago 30, U. S. A.

**CHECKS MACHINE PARTS TO TWELVE  
MILLIONTHS OF AN INCH**

Master gauge known as the Electrigage by which accuracy of thread gauges, threaded parts, machine-tool lead screws and racks can be checked developed by the Sheffield Corporation and Westinghouse, is graduated in fifty millionths of an inch and readings can be interpolated to about twelve millionths



The Electrigage quickly checks accuracy of thread gauges, lead screws and racks to about twelve millionths inch.

of an inch. This is equivalent to finding an error of three quarters of an inch in a mile.

Applied to an internal-external measuring instrument with the same accuracy the device checks the outside or inside of a ring for taper, bell, or out-of-round conditions. Electrigage uses a mechanical pickup that has a feather touch of but three ounces. Movement of the gauging stylus alters a magnetic circuit to produce a current indication. Amplified as much as 10,000 times and fed to a specially sensitive milliammeter (with a linear scale and zero center) the pointer shows plus or minus error. Power is obtained from a 115-volt, 60-cycle, single-phase circuit. An automatic stabilizer prevents voltage variation from affecting quality of the results. Exceptionally fast with good damping characteristics, the new instrument is of great value in production when readings must be obtained quickly.

1 1 1

**NEW VERSATILE PLASTIC**

A new plastic, polythene, adaptable to the manufacture of products as varied as collapsible tubes for toothpaste, water-proof coatings, piping, adhesives and insulation for electric wiring and cables is announced by the Plastics Department of E. I. du Pont de Nemours & Co., Inc., Wilmington, Del. Outstanding properties of polythene upon which it is expected that many important uses will be based, include flexibility and toughness over a wide range of temperatures, unusually good resistance to water and to penetration by moisture, chemical inertness, and excellent electrical properties. It is readily molded and fabricated by present methods.

(Continued on page 164)

# 5 REASONS WHY INDUSTRY LOOKS TO MUEHLHAUSEN FOR LARGE, HOT-COILED SPRINGS!



Controlled atmosphere conveyor type furnace



Complete magnafluxing and magnaglow facilities

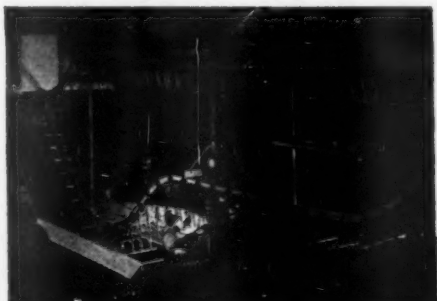
Specialized facilities enable Muehlhausen to produce springs:

- of any design
- to close tolerances
- in large quantities
- for quick delivery
- of lasting efficiency

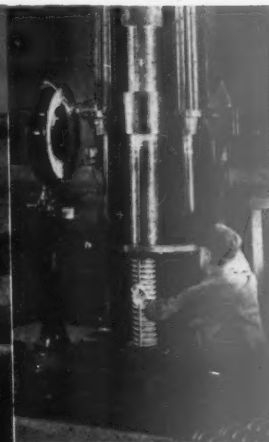
One entire plant devoted to hot-coiling—conveyorized for volume manufacture—with control laboratory an active part of production—quenching tanks of swimming pool size—skyscraper-like shot blasters for clean, lustrous finish and added life to springs. A letter will place Muehlhausen engineers at your service—to save you time, cost and effort in obtaining the *right* spring. New, illustrated booklet on hot-coiling springs now available. Muehlhausen Spring Corporation, Division of Standard Steel Spring Company, 675 Michigan Avenue, Logansport, Indiana.

To improve product performance, use

## MUEHLHAUSEN Designed SPRINGS



Conveyorized enameling and baking speeds output



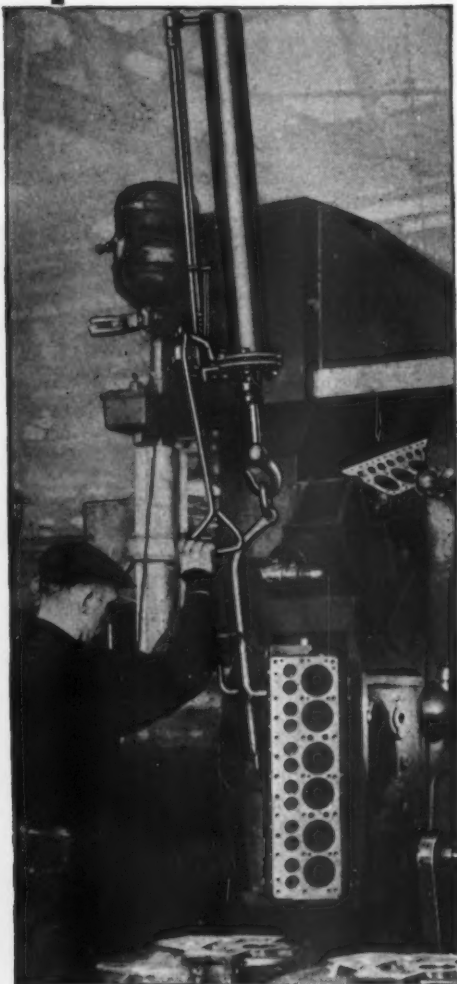
Hydraulic Load Tester



Precision hot-coiling springs on automatic equipment



## FOR MORE WAR WORK WITH FEWER WORKERS!



### *Use* **CURTIS AIR HOISTS**

**Y**ou can release workers for other jobs, reduce worker fatigue, and, at the same time, speed up production—where almost any lifting problem is involved—with Curtis Air Hoists.

In thousands of plants throughout the country, Curtis Air Hoists are doing countless lifting and lowering jobs—quickly, easily, and accurately. They're easily operated by unskilled labor, provide simple, one-man or one-woman control, and can't be damaged by overloading.

Curtis Air Hoists provide still other advantages over other types of mechanical or power hoists:

- Low first cost and low operating expense
- Only two moving parts
- Smooth, fast, accurate control
- No chains to stretch or wear out
- Capacities up to 10 tons
- Pendant or bracketed types



### **CURTIS**

ST. LOUIS • NEW  
YORK • CHICAGO  
PORTLAND • SAN  
FRANCISCO

For full information send the coupon today for free booklet,  
"How Air Is Being Used in Your Industry."

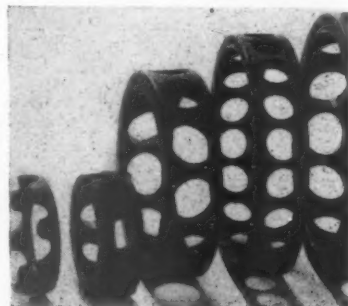
CURTIS PNEUMATIC MACHINERY DIVISION  
OF CURTIS MANUFACTURING COMPANY  
1908 Kienlen Avenue, St. Louis, Missouri

Please send me your free booklet, "How Air Is Being Used in Your Industry," and further details concerning Curtis Air Hoists.

Name.....  
Firm.....  
Address.....  
City..... State.....

### PLASTIC BALL BEARING RETAINER RING

Retainer for ball bearings are scarcely more than guides to hold the steel balls in position. They carry no appreciable load—the balls and races do that. Nevertheless, at high grinder speeds (sometimes 60,000 rpm) retainers assume new importance, according to Westinghouse engineers. They become the limiting feature of allowable load and speed. By using plastic Micarta retainers instead



Various sizes and types of retainer rings made of Micarta.

of the conventional steel type, the limitations have been largely overcome.

Micarta retainers have great mechanical strength and are light in weight. Machined accurately by automatic means, they are produced economically of materials less critical than steel or bronze. Rings are rigid yet flexible enough to resist vibration, fatigue and shock. Because Micarta has good wetting qualities, lubricants adhere better and provide quieter operation with less wear.

These plastic retainer rings have withstood tests that prove their ruggedness beyond doubt. Some have undergone 18 billion revolutions on a high-speed grinder. On a similar machine, others have had 15 months of continuous operation where an accuracy of half a ten-thousandth was continually maintained.

1 1 1

### EUTECTIC WELDING ALLOYS IN POWDER FORM

Eutectic low temperature welding alloys No. 16 and No. 1800 are now available in powder form. Composition, melting point, tensile strength, etc., are said to be exactly the same as those of the rods. No. 16 for all steels, binds at 1300-1600° F., and has a tensile strength of 117,000 p.s.i. No. 1800, for ferrous and non-ferrous metals, binds at 940-1120° F. and has an approximate tensile strength of 53,000 lbs. p.s.i. Manufacturer states that these powdered joining alloys are especially useful for large quantity production work when furnace or induction heating is used. Their major applications are in welding tight butt and lap joints, in carbide tipping of tools where the smallest amount of alloy is desirable, and in welding parts which would ordinarily require the alloy in a special shape. Eutectic welding alloys are now available in strip, coil, powder and rod form.

(Continued on page 166)

# POWER

**...Power to Back the Attack!**

## **Power Turns the Wheels of Industries Now Producing War Materiel**

Ladish Forged Steel Flanges...sizes from  $\frac{1}{2}$ " through 24" and in pressure ratings ranging from 150 to 2500 p.s.i.... serve in power plants everywhere, helping supply the power needed to back the attack.



**FITTINGS DIVISION**

TO MARK PROGRESS

# **LADISH DROP FORGE CO.**

**CUDAHY • WISCONSIN**  
MILWAUKEE SUBURB



*Starrett Tools* HELP PROTECT

Here is a STARRETT "Last Word" Dial Indicator doing an important inspection job for PAN AMERICAN.



A PAN AMERICAN service expert using a STARRETT No. 224 Micrometer Caliper, range 0—4 inches. Other ranges available are 2"—6", 6"—9", 9"—12", 12"—16", 16"—20", and 20"—24". The No. 224 like other Starrett Micrometers has the quick reading feature—each thousandth numbered on the barrel.



Now with Service Star

PAN AMERICAN'S

*Peak*

PERFORMANCE

Above the Andes or over the oceans—wherever PAN AMERICAN WORLD AIRWAYS' mighty ships take wing you'll find STARRETT Micrometers, Vernier Gages, Dial Indicators and other Precision Measuring Tools on the job.

STARRETT TOOLS are accepted without question by skilled hands everywhere. Starrett Tools inspire the confidence to do critically important work swiftly and with unfailing dependability.

THE L. S. STARRETT CO • ATHOL • MASSACHUSETTS • U. S. A.

*World's Greatest Toolmakers*

**STARRETT**

PRECISION TOOLS • DIAL INDICATORS • GROUND FLAT STOCK  
HACKSAWS • METAL CUTTING BANDSAWS • STEEL TAPES

#### COMBUSTION CONTROL

NEW system of combustion control, said to make available to the smaller industrial and municipal power plant a regulation as effective and reliable as the L&N Metermax system brings to the large central station, has been developed by Leeds & Northrop Co., Philadelphia



#### New L&N Combustion Control

44, Pa. Known as Type P it is applicable to boilers fired with coal, oil or gas, continuously proportions fuel and air to steam demand, and at the same time controls furnace pressure. To regulate fuel-feed and draft, system provides simple electrical balance by which the settings of valves, dampers or vanes are varied in definite proportion to steam demand as directed by master controller. If for any reason the operator does not desire full automatic control, he can move any of the drive units from push button stations. Independent operation of drive units allows the controllers to be serviced without interrupting boiler operations.

1 1 1

#### USDA DEVELOPS NORELAC, A NEW FILM-FORMING RESIN

A new film-forming resin with properties which promise to make it valuable for containers for food products, chemicals, precision machine parts, and heat-sealed moistureproof packages in general, has been developed by the Department of Agriculture.

Scientists of the Northern Regional Research Laboratory at Peoria, Illinois, where the discovery was made, say that this thermoplastic resin can be made from any vegetable oil that is rich in linoleic acid. Soybean and linseed oils are being used at present.

Tests indicate that this product may be used for laminating and moisture-proofing cellophane, aluminum and lead foil, glassine, and kraft and sulfite papers. It has excellent adhesion to most surfaces and good resistance to water, alkali, acids, vegetable oils, and some organic solvents. It is promising as a substitute for shellac.

Norelac, the name of the new resin, is derived from the first two letters of Northern and Regional, the name of the laboratory, and the first three letters of Lacquer.

(Continued on page 168)



# I PREDICT...

by **Raymond Loewy**  
Noted Industrial Designer



After the war you will travel more than you ever have. And one of the developments that will make it possible is the new helicopter air bus. This remarkable aeronautical achievement ushers in a really new mode of transportation that will enable you to make short air trips quickly, inexpensively and in complete comfort. Present bus terminals will be adapted as landing ports and maintenance hangars so you will take off and arrive in central sections of cities and towns. The multi-passenger helicopter air bus, already endorsed by authorities as entirely practical, will bring air travel to millions of persons and thousands of communities that now lack this form of transportation. When you buy War Bonds today remember they will enable you to experience this and many other marvels in tomorrow's world!

**Note:** The Weatherhead Company, one of the oldest and most important manufacturers of parts for the aviation industry, is prepared for the day when its four plants will again be contributing to aviation's peacetime needs.

Look Ahead with



## Weatherhead

THE WEATHERHEAD COMPANY, CLEVELAND, OHIO  
Manufacturers of vital parts for the automotive, aviation,  
• refrigeration and other key industries.

Plants: Cleveland, Columbia City, Ind., Los Angeles  
Canada—St. Thomas, Ontario



**FREE:** Write on company letterhead for "Seeds Of Industry"—a history of The Weatherhead Company, its many facilities and diversified products.

# Kill CORROSION

*Free Folder Tells How*

With ANGIER INDUWRAP\*—inhibitive Dual Wrapper—you can fight corrosion and win. You can prevent it entirely—kill its causes before they begin their deadly work.

This has been demonstrated, over and over again, by leading manufacturers of oil-slushed airplane engine and other finished parts shipped to the war fronts of the world.

Anticipate now your peace time needs when ANGIER INDUWRAP will be generally available to industry. Investigate INDUWRAP.

**WRITE TODAY FOR  
FREE FOLDER PU**

\* REG. U. S. PATENT OFFICE

**Angier Corporation**

CORROSION PREVENTIVE  
AND WATERPROOF PAPERS

FRAMINGHAM, MASS.

#### THINSTEEL—PRODUCED IN THICKNESS OF .001"

Thinsteel is announced by The Cold Metal Products Co., Youngstown 1, Ohio. It is cold rolled strip in specifications from SAE-1010 to 1.30% carbon open hearth or electric furnace grades, in tempers from full-hard to dead soft, in thicknesses from .001" and heavier. Thickness of .001" can be produced in coils up to 7" wide; .0015" to .004" up to 18" wide; .005" and heavier up to 23-15/16" wide. It can be held to gauge tolerances as close as plus or minus .0002" which means more feet per pound and, consequently, more parts per pound. Thinsteel can be secured in standard or best bright finishes, the latter by the use of tungsten-carbide rolls. Coils are available in weights up to 300 lbs. per inch of width. To date, Thinsteel embraces only strip in the "as rolled" or annealed condition, no facilities being available for tempering or coating.

#### HARDLAC—SHELLAC SUBSTITUTE FOR FOUNDRY PATTERNS

Hardlac is a spirit varnish said to have all the characteristics of shellac, developed by Technical Divn. of McDougall-Butler Co., Buffalo, N. Y. It brushes easily, dries quickly, can be sandpapered smooth or recoated shortly after application. Denatured alcohol is proper thinner or solvent. Hardlac pattern coating is made in clear and three colors—yellow,

red and black. The colors are used as contrasting identification for pattern parts. They brush on like an enamel and dry to smooth, even finish. Colors are said to hide perfectly in one coat.

#### CHANGE NAME TO PLEXIGLAS MOLDING POWDERS

Rohm & Haas Co., manufacturers of Plexiglas acrylic resin sheets and rods announces that its molding materials



Wartime Plexiglas molding powder products—gas mask lenses, prism-reflectors for jeeps, instrument lens, sight cups and rule.

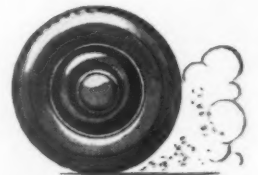
formerly known as Crystalite will henceforth be called Plexiglas Molding Powders. These come in a variety of colors, ranging from delicate tints and pastels to deep shades. They are supplied in formulations for both injection and compression molding and for extrusion.

(Continued on page 172)

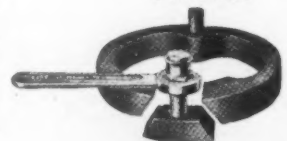
## 360° HOLDING POWER!



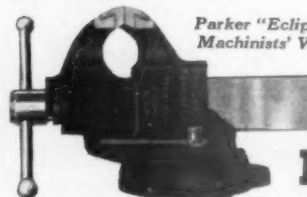
The swivel base on Parker Vises provides all-around positive gripping action—like an automobile brake. With it you can swing the vise to the easiest position for work, turn the locking wrench—and vise, base and workbench become one. The Charles Parker Company, Meriden, Connecticut.



Parker **POSITIVE**  
Swivel Base



Parker "Eclipse"  
Machinists' Vise



**PARKER VISES**

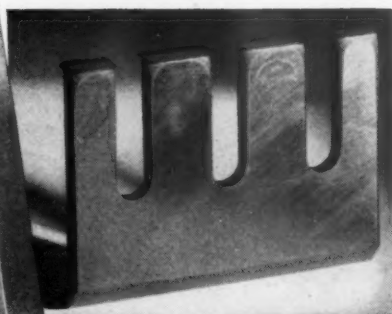
**America's Oldest**

# On all Woodworking Machines... SIMONDS <sup>RED BACK</sup> MACHINE KNIVES

Cut Faster... Smoother... Longer

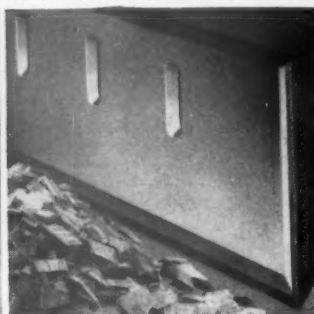


**PLANER KNIVES**—For surfacing lumber on square head planers. Tool steel edge, welded to lower carbon steel back.



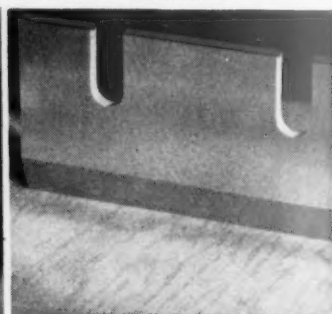
**HOG KNIVES**

For cutting up boiler fuel, scrap paper, etc. Tough, shock-resistant, long-lived.



**CHIPPER KNIVES**

Stand high speeds and heavy cuts without cracking or chipping out. Cut uniform chips.



**VENEER KNIVES**

Hold a sharp edge, lessen strain on machine, cut better veneer on less power.

Production men can count on the Machine Knives with the *Red Back*... to back them up with top performance, better production, and more machine-hours. Only Simonds' own electric steel is used in *Red Back* Knives. And every knife is uniformly hardened and tempered under automatic control... then precision-ground... and finally checked for balance and finish.

Every step of production is kept under Simonds control, in order to deliver perfect cutting tools in perfect condition. *And deliveries are being made promptly.* So get your orders in *right now* for Simonds *Red Back* Knives.

**THIN HIGH SPEED KNIVES**

For fast-feed operation on round-head machines. Stand high heat without softening.

**BRANCH OFFICES**

1350 Columbia Road, Boston—27, Mass.; 127 S. Green St., Chicago—7, Ill.; 228 First Ave., San Francisco—5, Calif.; 311 S. W. First Ave., Portland—4, Ore.; 520 First Ave. So., Seattle—4, Wn.; 31 W. Trent Ave., Spokane—8, Wn.

**SIMONDS**  
**SAW AND STEEL COMPANY**  
FITCHBURG, MASSACHUSETTS

PRODUCTION TOOLS FOR CUTTING METAL, WOOD, PAPER, PLASTICS





**Lyon Adjustable Wood Shelving.** Open and closed types. Shelving adjustable every 3" vertically and horizontally—no tools necessary. Quickly set up by inexperienced help with one tool—a screw driver!



**Lyon Wood Cabinet.** Trim design and attractive finish makes these cabinets a match for any steel cabinets or other equipment now in use. 3 types available: Storage, Wardrobe, and Combination Storage and Wardrobe (illustrated).



**Lyon Shoprobe.** Takes up less floor space per person than the area covered by a man's hat. Gives safe, convenient, mobile storage for workers' clothing.

## "Indispensables" **NOW** and POST-WAR



● If you have a wartime problem of releasing needed floor space, faster handling of parts in work, or better control of tools and inventory . . . or if you are laying plans for quick reconversion

when victory is won . . . Lyon can help you in two ways.

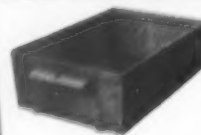
1. Lyon's complete line of Shop and Storage Equipment provides engineered units that help solve problems of space conservation, production acceleration, tool protection, and materials control. All of this Lyon Equipment is now available on satisfactory priority.

2. Lyon Surveys have proved their worth in hundreds of leading industrial plants. They include a thorough analysis of present storage, toolroom and materials handling equipment . . . and recommendations for the selection and arrangement of equipment for maximum efficiency and economy.

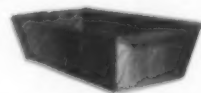
Ask your Mill Supply Distributor for Catalogs showing Lyon Equipment available for prompt delivery on satisfactory priority. Write us for details on Lyon Survey Service.



**Lyon Work Bench, No. 5199.** With Half Depth Shelf, Back Stop and Two End Stops. 60" long, 26" deep, 36" high. Drawer 12" wide, 16" deep, 8" high. Complete as shown \$29.95. Without drawer \$17.95.



**Lyon "W" Shop Box—No. 421814.** 12" x 18" x 6"—16 gauge steel, \$1.60.



**Lyon "L" Shop Box—No. 410F16.** 11" x 22" x 6"—16 gauge steel, \$0.95.



**Machine Tool Cabinet, No. 2346-L.** Heavy steel bench top makes a sturdy mounting for small grinders and vises. Shelves furnish 72 sq. ft. of storage area protected by double swinging doors, 36" wide, 26" deep, 37" high including back stop. \$17.05.



**Lyon Tool Tote—No. 2383-11.** With Flange-edge Top, Two Drawers, one Flange-edge Shelf, and Casters. 18" x 26" x 36 1/2". Drawers 15" x 23 1/2" x 4 5/8". \$11.39.



**Lyon Bench—No. 2401-A.** 26" x 32 1/4". Made of heavy forged steel. Ideal for heavy wood top benches, wood top tables and machine mountings. \$9.95.

# LYON

**METAL PRODUCTS, INCORPORATED**

General Offices: 333 Madison Ave., Aurora, Ill.

Branches and Distributors in All Principal Cities



## PENN SALT HEAVY CHEMICALS AT WAR

Penn Salt  
manufactures

### Liquid Chlorine

for Water Sanitation and Sewage Treatment  
and for the Paper and Pulp Industry

Also

Caustic Soda • Corrosion-Proof Cements  
Alum • Sodium Aluminates • Ferric Chloride  
Bleaching Powder • Chloride of Lime  
Anhydrous and Aqua Ammonia • Acids  
Perchloron® and other products

\*Trade-mark Reg. U. S. Pat. Off.



PENN SALT CHLORINE and PERCHLORON® are on duty at the battlefronts around the world—in the training camps—at every bridgehead . . . protecting our fighting men against the dangers of water-borne disease . . . serving the medical corps as bactericides . . . sanitizing clothes and supplies in camp laundries . . . guarding soldiers' feet against infection.

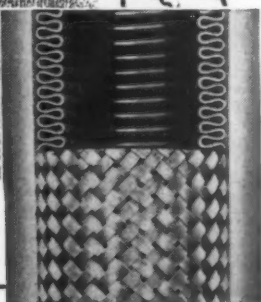
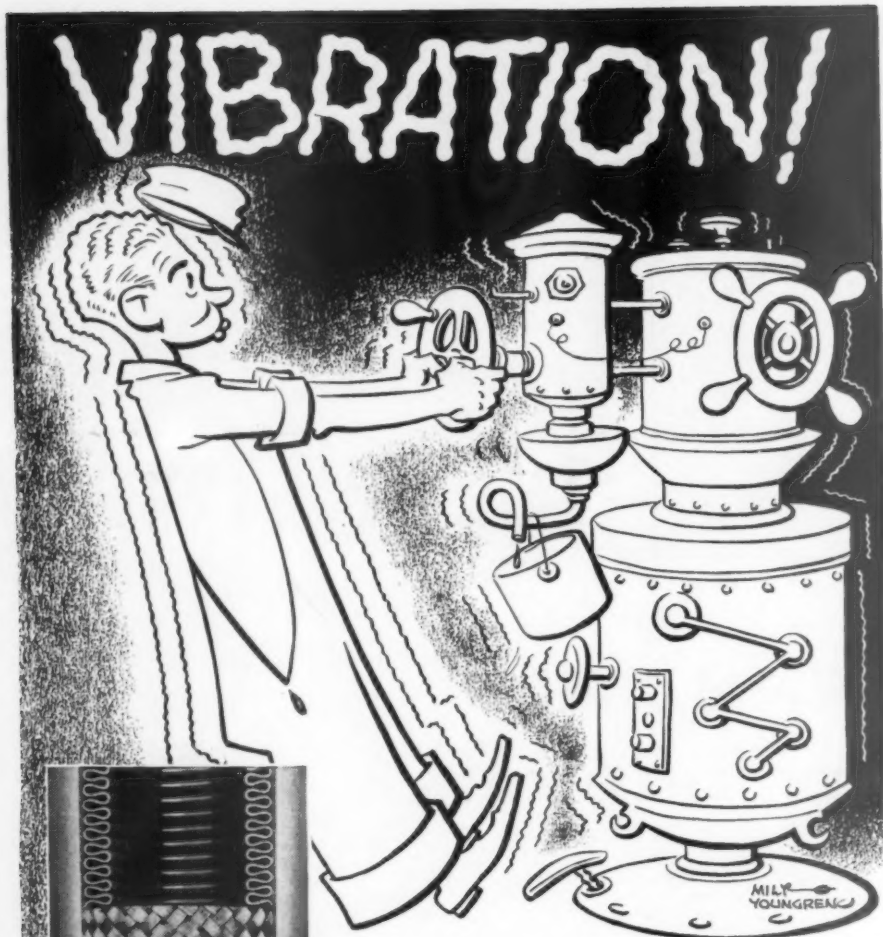
PENN SALT CAUSTIC SODA is doing many vital war-time jobs in scores of industries. It is used in the manufacture of explosives—and in making textiles for army uniforms, blankets, towels and tents—it is an important new material for gas mask canisters—the pulp and paper industry requires substantial amounts—even greater quantities are supplied for chemicals and soaps.

*These needs for Penn Salt heavy chemicals may sometimes limit our supply for other purposes—but our wartime activities mean expanded production and greater service facilities, to serve you better when the war is won.*

**PENNSYLVANIA SALT**  
**MANUFACTURING COMPANY**  
*Chemicals*

1000 WIDENER BUILDING, PHILADELPHIA 7, PA.

NEW YORK • CHICAGO • ST. LOUIS • PITTSBURGH • MINNEAPOLIS • WYANDOTTE • TACOMA



OUR ENGINEERS will recommend the type of flexible tubing most adaptable to these uses—

1. For conducting liquids from a vibrating to a stationary medium.
2. For high fatigue resistance under constant vibration.
3. For handling searching liquids without seepage.
4. For extreme temperature conditions.
5. For use where corrosion resistance is a factor.
6. For conducting liquids and gases to reciprocating parts.
7. For maximum flexibility with a minimum of length.
8. For dampening noise between two units that must have pipe connections.
9. For correcting misalignment.



## REX-WELD Flexible Metal Hose CONTROLS IT

Chicago Metal Hose Corporation's REX-WELD is highly resistant to fatigue even when subjected to constant vibration over long periods of time. It is extremely flexible and remains airtight and leakproof after years of hard usage. It stands up under high temperature and prolonged flexing. REX-WELD is fabricated from strip metal and is precision autogenous welded to form a weld stronger than the tube itself. Write, giving complete information and we will be glad to furnish engineering recommendations for any design problem.

Flexible Metal Hose for Every Industrial Use

# CMH

**CHICAGO METAL HOSE CORPORATION**  
MAYWOOD, ILLINOIS

Plants: Maywood and Elgin, Ill.

### PLUSWOOD—"WOOD ALLOY"

Pluswood is a resin impregnated plywood heated by high frequency waves and simultaneously compressed under heavy pressure. In appearance natural uncolored Pluswood is dark, toward a deep rich brown. It carries a beautiful wood grain with a luster that is practically unassailable to wear and exposure according to the manufacturer, Pluswood, Inc., Oshkosh, Wis. It weighs about one-half as much as aluminum, and one-fifth as much as steel. It can be sawn, drilled, turned, threaded, milled and tapped. It is unaffected by dilute acids, alcoholic mixtures and other organic liquids. Highly resistant to swelling or shrinking. Tensile strength, 32,000-40,000 lbs. psi; compressive strength 20,000-28,000 lbs. psi; modulus of rupture 35,000-40,000 lbs. psi; modulus of elasticity in bending  $3.5 \times 10^6$ ; moisture absorption 1.0 to 3.0% in 24 hours; dielectric strength, no failure to 86,000 volts per in. Veneer used is taken from highest grade northern birch and maple logs.

1 1 1

### CIRCULAR FLUORESCENT LAMP

Architects and designers of portable lamps and lighting fixtures will have a brand new lighting tool when circular fluorescent lamps become available. As soon as conditions permit, the Westinghouse Lamp Division will add these to its line of Mazda F lamps. Sizes to be produced and current consumption are as follows:

Approx. Over- all Outside Diam. of Circle	Maximum Bulb Size	Approximate Watts
8½ in.	T-10	20
12¼ in.	T-10	30
16 in.	T-10 or T-12	40

There are no production facilities for these new lamps at present and due to the heavy demands of industry and the military, no sample lamps are available. Prior to going into production on these new lamps, complete information about auxiliaries and accessories will be released.

1 1 1

### NEW FORGING METHOD SAVES 13% OF STEEL

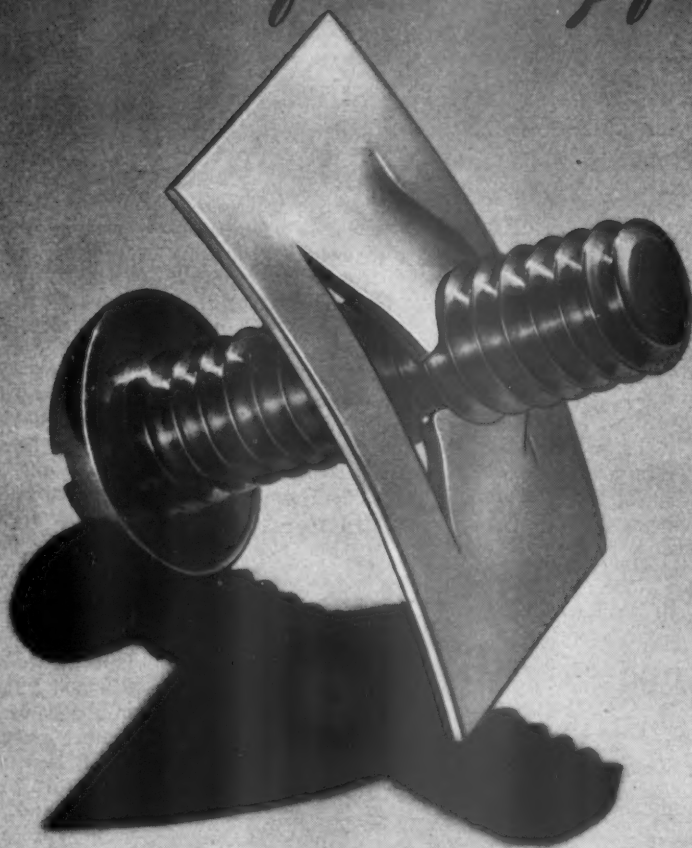
T. M. Evans, president of H. K. Porter Company, Inc., Pittsburgh, Pa., announces that a subsidiary, Porter Blairsville Co. operating a naval ordnance plant, has developed a new method of forging heavy projectiles which saves 13% of the amount of steel used as compared to previous practice.

Mr. Evans stated that in addition to substantially conserving metal, the new method also reduces the cost of making the projectiles, a saving which has been passed on to the Navy in the form of a voluntary reduction in price.

The new forging technique, named the "contoured cavity" method, was specifically developed for manufacture of large naval shells by Porter, and eliminates the previous necessity of machining away a large amount of metal.



# *Speed Nuts perform more than a fastening function*



They prevent vibration loosening by means of their exclusive Double Spring-Tension Lock that ABSORBS the vibration • They are applied faster and so reduce assembly time and costs, tremendously • They avoid use of wrenches and needless handling of parts • They are even made in scores of ingenious shapes that completely eliminate two or more parts • Their wide bearing surface removes the need for spanner washers • They save from 50% to 80% in weight • If you do not have our 20 page summary catalog No. 185, write for your copy today.

**TINNERMAN PRODUCTS, INC.**

2050 FULTON ROAD, CLEVELAND 13, OHIO

Wallace Barnes Co., Ltd., Hamilton, Ontario

Simmonds Aerocessories, Ltd., London

**FASTEST THING IN FASTENINGS..**



# Among the ASSOCIATIONS

## IMPLEMENTS OF PRODUCTION AND SUPPLY

Conservation through Simplification and Standardization

Reviewed at Washington, D. C. Meeting.

Howard Coonley, Director of the Conservation Division, War Production Board, and formerly president of the National Association of Manufacturers, was the guest speaker at the February 8th meeting of the Association of Purchasing Agents of Washington, D. C., held in the Mayflower Hotel. His subject was "Simplification and Standardization as Implements of Production and Supply."

"Until this war started on December 8, 1941," said Director Coonley, "without much thought of imagination we assumed optimistically that there was a surplus of all materials—more than enough to take care of our needs under all conditions. On the morrow of December 7, 1941, we were rudely awakened to the unpleasant fact that there was a limit to the availability of the priceless materials at our command, and that measures must be taken at once to conserve our rich resources, while employing every possible means of increasing our facilities."

"No one can contemplate this phenomenon of our natural resources without a profound feeling that these materials should be used wisely, efficiently and economically. It was from the root of this realization that conservation sprang, and the natural offshoots of conservation are Substitution, Specifications, Simplifications and Standardization, with its foster child, Interchangeability."

### 72 Specifications Committees

Commenting on specifications, he said "The system of Federal Specifications was established to standardize the grades and sizes of products purchased by more than one Government department. They are prepared by 72 Federal Specifications Committees composed of representatives of the various Government Departments interested in the product in question. When a product is used by one department, that department prepares its own specifications. For instance, there are many Navy Department Specifications for products used only by the Navy. Similarly, the War Department prepares certain specifications for its own use."

"The Conservation Division is represented on all Federal Specification Committees, and takes part in the preparation of the specifications to see that true conservation of the scarce materials is practiced. We also review specifications prepared by the Army, Navy and other Gov-

ernment Departments to see where conservation can be effected. Two methods of conservation are considered in this review: First, by issuing amendments limited to the war period specifying substitutes in place of critical materials needed in the war program. Second, by issuing emergency alternate Federal specifications to indicate alternate materials for consideration.

"In the design of modern equipment, advantage was taken of the superior properties provided by modern materials of



Howard Coonley, Director of Conservation Div., W.P.B.

construction, such as aluminum, copper, brass, alloy steels, rubber and plastics, to provide greater durability and greater convenience, and in many cases lower cost. With these materials so urgently needed for the war program, it was necessary to replace them by others, which, while not quite as satisfactory, could still do the job. Many Government specifications, therefore, have been reviewed and changed to specify available materials in place of those that are short."

### Hugh Savings Achieved

Reviewing savings that have been achieved through standardization, standardization and interchangeability, and substitution and down-grading, he stated that the substitution of pressed steel stampings is one of the most outstanding examples of conservation by substitution, citing the steel cartridge case program as being the most notable, in that it saved 200,000 tons of brass in 1943. The substitution of pressed steel for brass bar stock, saved 12,000 tons in 1943, and the silver bus bar program (down-grading

## INCOME TAXES DISCUSSED AT NEW YORK MEETING

Following a brief review by National Director Walter E. Cummin of the National Association Executive Committee meeting recently held in Cleveland, and a brief report on the coal situation by Millard W. Merrill, who stated "we have a critical situation so far as coal is concerned, but it is more a matter of getting coal where it is wanted at the right time—it is a matter of distribution," members of the Purchasing Agents Association of New York at the February 15 meeting heard Sylvia F. Porter, columnist of the New York Post give an interesting talk on Federal income taxes and tax forms. She declared that as far as the tax program is concerned "we are doing one of the worst jobs in the world", raising less than 50% of our expenses through taxes. Tax laws, she said were originally designed to "soak" the rich—now they are "soaking" everybody; that \$50 and \$100 bills were floating around in abundance because many people would "rather carry cash than pay taxes". She stated that the tax laws we are living under are as much a means for social reform and the prevention of inflation, as they are a means for raising revenue, and one of the reasons we have not had a major inflation is because the American public is saving much more than it has been given credit for. Taxes will not be changed for at least a year or so, she said, and will not be made higher on individual incomes. Our income tax laws and income tax blanks have reached the point of absurdity, she declared, and while our lawmakers may have been indifferent about the rights of the 3,000,000 income taxpayers of a few years ago, now there are 50,000,000 taxpayers, and "we can have the tax laws simplified if we let our legislators know what we want."

### CHARLES DABNEY HEADS HOUSTON ASSOCIATION

Charles W. Dabney, Champion Paper & Fibre Co., has been elected president of the Purchasing Agents Association of Houston, Tex. Earl Cobden of the Hughes Tool Co. was elected first vice president, and Wm. R. H. Mau, Missouri Pacific R. R., second vice president. S. L. Dodson, Great Southern Life Insurance Co. was re-elected secretary, and W. J. Peddie, Maintenance Engineering Co., was re-elected treasurer. D. M. Laver is National Director, and Lee Crawford, alternate.

(Continued on page 176)



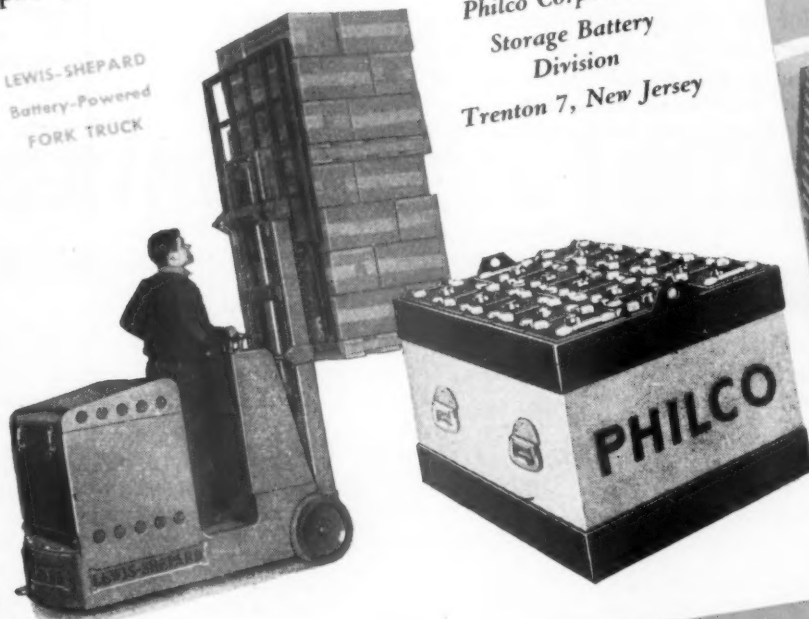
# PHILCO "XL" BATTERIES

*put 10% more power  
capacity in your present  
Electric Industrial Trucks!*

YES, with Philco "XL" Batteries, your present electric industrial trucks will haul 10% more material! You'll get this extra work out of your materials handling equipment because Philco "XL" Batteries provide 10% extra capacity at no increase in overall battery size! Now, when you need maximum service from your trucks, find out about Philco Batteries. Drop us a note stating truck make and model. We'll tell you exactly how much more ampere-hour capacity you can get with a rugged, dependable Philco!

LEWIS-SHEPARD  
Battery-Powered  
FORK TRUCK

Philco Corporation  
Storage Battery  
Division  
Trenton 7, New Jersey



*Specify*

**PHILCO**  
INDUSTRIAL TRUCK  
BATTERIES



# New Slide Rules IN PRODUCTION



## 3 Types \* 3 Prices \* Immediate Delivery SIMPLE INSTRUCTION MANUALS INCLUDED

Made for the emergency—they'll do the job—and believe it or not!—you can get 'em right now. Post Slide Rules come in good looking leatherette cases and are accompanied by comprehensible instruction manuals. Read the descriptions below and reach for the phone for fast-action delivery.

**1452D.** Ten inch Celluloid Face bevel edge slide rule. Inches and metric rules on bevel edges. Scales A, B, C1, C, D and K on slide front. Scales S, L and T on reverse side.

Attractive leatherette case.....List Price \$3.50

**1444D.** Five inch Celluloid Face POCKET style slide rule. Scales A, B, C1, C, D and K on slide front. Scales S, L and T on reverse.

Leatherette Pocket case.....List Price \$2.25

**1446D.** Ten Inch Printed Surface slide rule. Inches and metric rules on vertical sides. Scales A, B, C1, C, D and K on slide front. Scales S, L and T on reverse side.

In attractive leatherette case.....List Price \$1.50

**POST**  
**DETROIT**

*The Frederick Post Company*

561 E. JEFFERSON AVE.

RANDOLPH 8483

### IMPLEMENTS OF PRODUCTION & SUPPLY WASHINGTON, D. C.

(Continued from page 174)

in reverse) resulted in the saving of 13,500 tons of copper.

"Plastics," he said, "made of various types have replaced brass in bomb fuses, stainless steel in canteens, aluminum in airplanes, steel in helmet liners, brass for flare containers, steel for practice bayonets, steel and brass for bandage containers and copper in fuel tubing.

"Electroplating has saved large quantities of scarce materials. Steel cartridge cases are zinc plated and chromate treated. The plating of buttons, fasteners and insignia with zinc, gold or silver has saved much valuable material."

Of especial interest was Mr. Coonley's statement that specifications for redesign of medium army tanks had reduced the use of aluminum 41%, copper 55%, nickel 75%, tin 21%, and rubber 36%. Also, fibre substituted for wood in "V" shipping boxes saved 10% of the shipping space, or one ship in ten, and in addition more boxes can be made from the same amount of timber, if it is used as pulp, for fibre packages instead of lumber for wooden containers.

#### Reduces Wait, Saves Space

"Reduction of types, sizes, varieties, reduces material, time and manpower in packaging and handling from production point to point of consumption. Simplification conserves space in railroad cars, trucks, warehouses and ships. It saves space, time and labor at the supply bases of the Armed Forces. It reduces waste when articles are unpacked and used. It reduces the salvage labor and transportation back to the re-use point," he said. "While weight and space are at a premium in land and sea transportation, they are doubly so in the air. This factor will continue to be highly important in peace time."

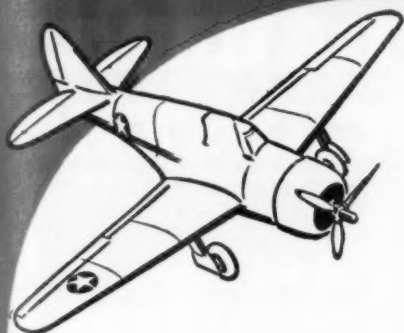
Mr. Coonley declared that "The requirements for 1944 will call for increased production of planes (100,000) of much heavier design. The planes being made today average double the weight of those produced in 1942. The requirements also call for 1,000,000 trucks and 80,000 landing craft. These demands on our materials and facilities more than offset the lessened demand for tanks, small arms and new construction."

The association was honored in having as its guest, L. R. McGregor, Esq., Commander, British Empire, and Director-General of War Supplies Procurement for the Commonwealth of Australia.

At the suggestion of A. R. Miller, chairman of the Program Committee, the Association voted to hold open forum meetings prior to dinner meetings. Chairman Curran Ridout of the Membership Committee presented the names of four new applications for membership which were approved, as follows: Edward E. Hanson, A.G.P.A., Southern Railway; Clyde R. Whitaker, A.G.P.A., Southern Ry.; Thomas Foster, Assistant Purchasing Agent, Pennsylvania Central Air-

(Continued on page 178)

# for MAXIMUM PROTECTION



## ... In Guarding the Fliers of America's Fighting Aircraft

The list of Breeze products reads like an aircraft assembly line. Each product is doing its part in guarding America's fighting aircraft. Breeze Aircraft Armor Plate, manufactured by the famous Breeze electro furnace process, is engineered to unusual shapes and sizes to meet designers' special requirements. Breeze multiple circuit electrical connectors, those tiny couplings which carry from two to forty-two circuits bring the life giving impulses to and from the vital parts of the plane. Other Breeze products including radio ignition and auxiliary shielding, Shielding Conduit and Fittings, Conduit Junction Boxes, Cartridge Engine Starters, Propeller Pitch Controls, Remote Control Drives, Electrical Filters, etc. are all doing their part in the battle of protection.

BREEZE CORPORATIONS, INC.



NEWARK, N. J.

# For Maximum Protection

## ... In Vital Shipping Throughout Industry

Mason MAILMASTERS are important for their ease of mailing, their complete rigidity, and their convenient wire closure. These engineered packages are your assurance of better and safer shipping, and their outstanding features make them valuable as assembly line parts' boxes.


**THE MASON BOX CO.**

ATTLEBORO FALLS, MASS.

 175 5TH AVE.  
NEW YORK



## SPARTANS CUT CUTTING COSTS

## TRY THEM TODAY

"No matter what the metal cutting job is there is a Spartan Blade for it and it will satisfy.

Hundreds of plants throughout industry demand and receive Spartans from their local Spartan Distributors. We say they'll answer your problems and ask you to make us prove it."

**Spartans Get Results**  
**Spartan Saw Works, Inc.**  
SPRINGFIELD, MASS.

(Continued from page 176)

lines; and, George J. Cahill, Assistant General Supply Officer, American Red Cross.

E. P. Scully, chairman of the Committee on Education, called attention to the course in "Purchasing" being conducted by Clifton E. Mack at American University, and urged members to enroll in order to derive the benefits of such a course. In connection with the forum meeting, Mr. Scully also suggested that there should be commodity discussions as well as other types of discussion.

Mr. Miller arranged, through the courtesy of the Anaconda American Brass, Ltd., for the showing of a very interesting film, entitled "Copper Goes to War," which was shown at the meeting.

A. E. Giegengack, Public Printer, Government Printing Office, will be the guest speaker at the March meeting.

Mr. Clifton E. Mack, Director of Procurement and President of the Association, presided.

### NEWBERY GUEST SPEAKER AT LOUISVILLE

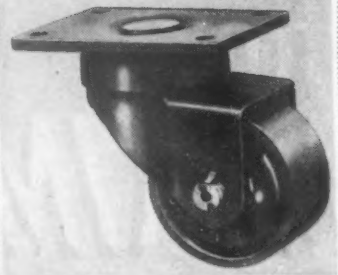
The Purchasing Agents Association of Louisville met on Tuesday, January 25th in the Colonel's Room of the Kentucky Hotel. Ben R. Newbery, President of N.A.P.A. was the featured speaker. He discussed the problems of the Purchasing Agent during the war period and pointed out some of the purchasing problems in the post war era. He also stated that synthetic rubber and plastics would play a much more important part after the war, and that there would be new standards of performance in manufacturing processes due to new methods developed in war time production. He also stated that products would be handled much quicker in the post war period, because of a much-speeded-up transportation system.

Professor C. W. Williams, head of the Economics Department of the University of Louisville gave his monthly discussion on an economic subject. He talked of the current inventory situation, pointing out that inventory comparisons as a whole did not show an alarming picture, but he stated that the picture showed that heavy materials had increased to a far greater extent than other classifications. Even these inventories are not burdensome under present production schedules, but if the European phase of the war suddenly ended, the picture would be entirely different. He felt that Purchasing Agents had to give considerable thought to how soon the war with Germany might end and also to the extent of inflation.

Malcolm Mason, the "Official Introducer" of the Louisville Association presented two new members, E. M. Eisenheis, of the Liberty National Bank and Trust Company and H. F. Heffernan of the Colgate-Palmolive-Peet Co.

Mr. Newbery was a guest of the officers of the local group at a luncheon at the Pendennis Club. The balance of his

(Continued on page 180)



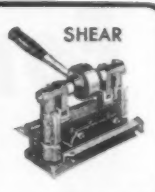
## DARNELL CASTERS

**A SAVING AT  
EVERY TURN**

**DARNELL CORP. LTD.**  
LONG BEACH, CALIFORNIA,  
60 WALKER ST. NEW YORK, N. Y.  
36 N. CLINTON, CHICAGO, ILL.



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**NO  
DIES!**

"DIE-LESS DUPLICATING"...

a new industrial technique made possible by the accuracy, adaptability and ease of operation of DI-ACRO Precision Machines—Shears, Brakes, Benders—especially when used as a continuous, integrated production process.

The DI-ACRO System of "Metal Duplicating Without Dies" makes parts just as accurately as can be done with dies, to a tolerance of .001" in all duplicated work. The delay of waiting for dies is avoided, deliveries speeded up.

Write  
for  
Catalog



BRAKE



**O'NEIL-IRWIN MFG. CO.**  
305 EIGHTH AVE. SO., MINNEAPOLIS 15, MINN.



## "Turning Points" to Victory



### BEACHHEAD BRAWL-BUGGY

The very essence of sea-borne invasion is the amphibious troop carrier that literally wades into the enemy and "slugs it out" in typical American fashion. Engineering magic enables this versatile vehicle to drive itself from ship to shore, secure a four-wheeled foothold and deepen the beachhead for safe debarkation of more men, munitions and supplies. It is often the turning point of invasion success — and its own "turning points" are ball bearings.

Amphibious vehicles have hazards other than bombs and bullets. Mechanically, they must resist the corrosion

of sea water, the abrasion of sand, and the whole range of global war's temperatures from Arctic to Equator. To meet these conditions, Fafnir Ball Bearings are engineered to resist trouble while they deliver smooth, dependable performance in vital parts of practically every type of war machine.

They will be just as carefully engineered to serve in untold numbers of applications and deliver friction-free performance in coming peacetime products. The Fafnir Bearing Company, New Britain, Connecticut.

# FAFNIR ARMY EMBLEM BALL BEARINGS



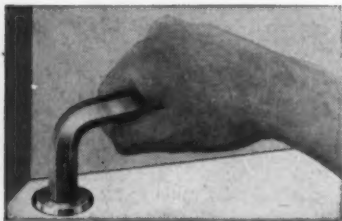


**GUARANTEED**  
*Unfailing* **PERFORMANCE**

**THEY'RE COMPLETELY  
COLD FORGED**

HOLO-KROME FIBRO FORGED Alloy Steel Socket Screws are guaranteed by Holo-Krome to give Performance — Unfailing Performance . . . These Completely Cold Forged Alloy Steel Screws (method patented and used solely by Holo-Krome) are precision made to exacting standards. Uniform accuracy and quality of finish . . . Tough fastening jobs are handled with a saving of weight in the parts to be assembled plus saving space and time due to the internal wrenching feature.

SPECIFY "HOLO-KROME"



**QUICK & POSITIVE TIGHTENING  
DUE TO INTERNAL WRENCHING**

**THE BETTER FASTENING METHOD**

**THE HOLO-KROME** — SOCKET SCREW PRODUCTS —  
SCREW CORP. HARTFORD 10, CONN. U. S. A.

(Continued from page 178)

time in Louisville was spent in a visit to Churchill Downs where the famed Kentucky Derby is run, and a visit to a launching of a LST Invasion Boat at the Jeffersonville Boat and Machine Company in Jeffersonville, Indiana.

#### TALKS ABOUT WAR EXPERIENCES AT VANCOUVER

Major S. F. Barbour, Purchasing Agent, Home Oil Distributors, Ltd., Vancouver, B. C., recently returned to resume his former position with the Home Oil after four years of military activities overseas, addressed the February 8th meeting of the Purchasing Agents Association of British Columbia, in Hotel Vancouver, Vancouver, B. C., on his experiences in Norway, Iceland and North Africa where he had been in charge of Base Ordnance Depots. He gave his audience a good insight into the tremendous difficulties involved in supplying the armed forces overseas.

President Walter McPhee introduced two new members, A. J. Hutchinson, Marwell Construction Co., Ltd., and J. H. Corless, associate member, White Pass and Yukon Route. Plans for the March meeting announced by Program Committee Chairman J. B. Watson, include an address by W. L. Templeton, manager of the Better Business Bureau.

#### PRESIDENT NEWBERRY SPEAKS AT WARREN, PA.

The Purchasing Agents Association of Northwestern Pennsylvania had President Ben Newbery of the National Association as guest speaker, at its regular meeting January 20, in Carver House at Warren. Twenty-four regular members were present, four new members, and twenty-one executives representing the industrial groups from which the membership is made. Buffalo sent a nice representation to the meeting, namely President G. C. Katzer, and A. Arthurs, J. Gamble, G. F. Meyers, L. Cavanaugh, G. B. Michie and H. Wodtke.

During a short business meeting, the applications of four new members were approved, namely W. H. Loveland of the Ajax Iron Works, Corry, Pa.; Paul Broderick of the National Forge & Ordnance Co., Irvine, Pa.; E. Danner of the Raymond Mfg. Co., Corry, Pa., and H. Ledebur of the Hammond Iron Works, Warren.

The highlight of the meeting was an address by Mr. Newbery on "The Purchasing Agent and the War, in which he pointed out that America had done a marvelous job on the home front. Our number one job, now, he stated, is to keep producing the materials needed to crush our enemies. He said that reconversion and rehabilitation would soon be important factors, and that the Purchasing Agent would find himself to be an important cog in the chain of events which will take place.

At the Associations February 3 meeting, the Rev. Norman Rawson, pastor of

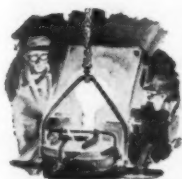
(Continued on page 182)

# BRAKE SHOE WARS ON WEAR

*Announces research group to make vital parts last longer*

For years, Brake Shoe in all of its divisions has been fighting to reduce losses caused by wear; heat, friction, impact, corrosion, abrasion and stress — wear from whatever cause.

Now such activities have been augmented and strengthened by centralization of experimental engineering under the direction of a Research Group at Mahwah, N. J.

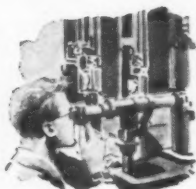


While activities of this Research Group cover a wide range of industrial problems, their immediate responsibility is to carry on relentless war on wear.

In nearly every machine there is a "punished" part — a place where wear is greatest.

Often a manufacturer's success depends upon his ability to improve that particular "punished" part.

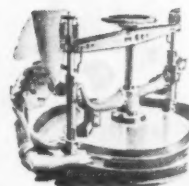
It is Brake Shoe's business to know the best material for each "punished" part and how to produce that material economically.



If existing materials are not good enough the Research Group endeavors to design better ones.

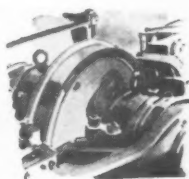
If design is faulty, Brake Shoe engineers can offer sound suggestions for changes.

Brake Shoe focuses on one part the effort that the manufacturer, for cost reasons, must spread over the whole machine.



The result? A better product . . . often at lower cost.

The resources of the Brake Shoe Research Group — unique we believe in this country — are available to manufacturers whose production calls for large runs of standardized parts.



## Is Brake Shoe on Your Parts Source List?

Because many of the millions of parts produced by Brake Shoe for war have equally important peacetime uses, Brake Shoe will be ready for parts assignments in volume, the moment victory is won!



### BRAKE SHOE'S RESEARCH GROUP

1. Engineering Laboratory
2. Metallurgical Laboratory
3. Experimental Foundry



*A parts source that may help you meet postwar competition*

American Brake Shoe Company, 230 Park Ave., New York 17, N. Y.

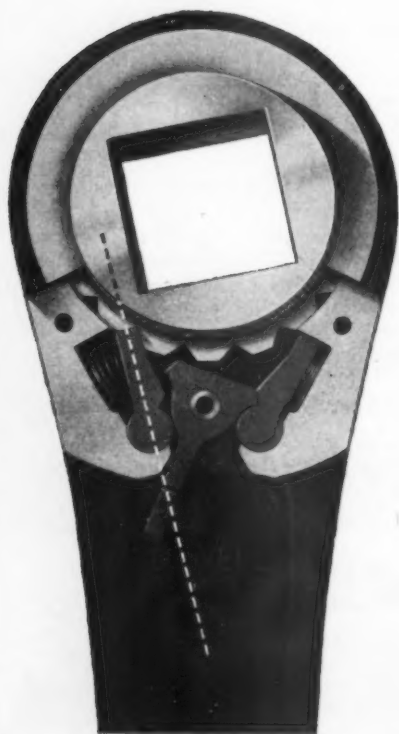
### 8 DIVISIONS, 59 PLANTS SERVING INDUSTRY AND TRANSPORTATION

American Brakeblok Division . . . . . Detroit, Mich.  
 Ramapo Ajax Division . . . . . New York City  
 American Manganese Steel Division . . . . . Chicago Heights, Ill.  
 Brake Shoe and Castings Division . . . . . New York City

Kellogg Division . . . . . Rochester, N. Y.  
 American Forge Division . . . . . Chicago, Ill.  
 Southern Wheel Division . . . . . New York City  
 National Bearing Metals Corp. . . . . St. Louis, Mo.



# THERE'S NOT ANOTHER LIKE IT!



## Here is the Difference

The two straight Pawls set in the solid stock of the handle where they rotate are backed up by the solid stock of the Handle and the Gear, the strongest construction that can be had.

The Shipper rotates on the solid stock of the Handle, not on a pin or screw.

**LOWELL WRENCH CO.**  
WORCESTER MASS.



(Continued from page 180)

the United Centenary Church, Hamilton, Ont., spoke on "Some Prospects of the Immediate Future". Commodity discussions were led by Alfred L. Lauffenberger, steel; Walter Windahl, coal; and Lester Danner, priorities.

1 1 1

## SPRINGFIELD (OHIO) MEETINGS WELL ATTENDED

The Springfield Branch of the National Association devoted its first February 9th meeting to a general discussion of commodity subjects under the direction of President Oscar Gano. Also, National Director Eugene Saum reported on the Sixth District Council meeting. B. F. Downey reports that the membership attendance on the schedule of two meetings per month, was the highest in the district. This he attributes to the efforts of officers and members to make the meetings indispensable. In fact, he says, the discussions have been so well planned and presented that no one misses the opportunity to attend the meetings unless something far out of the ordinary interferes.

1 1 1

## AIM TO INCLUDE EVERY PURCHASING AGENT IN MEMPHIS

The newly elected officers of the Memphis Association of Purchasing Agents, Memphis, Tenn., presided over their first

meeting at a dinner held on January 19th, at Hotel Gayoso. W. E. Rier, Rotary Lift Co., president, spoke enthusiastically on plans to increase the membership to include every purchasing agent in the city. The new officers were named to serve until June, when permanent officers will be elected for the year. President Rier appointed the following committees at a special meeting of the officers:

Membership committee: Martin Sunderland, Memphis Union Station;

Arrangement committee: J. R. Whalen, Jr., American Finishing Co., John W. Harris, Memphis Housing Authority, M. A. Stepherson, Memphis Packing Co., and B. L. Hand, Layne & Bowler Co.;

Program committee: E. M. Almy, chairman, National Fireworks Co.;

By-laws committee: H. R. Graves, chairman, National Fireworks Co. and E. H. Almy, co-chairman.

It was suggested by a number of the members that a "Know Each Other Personally" plan be devised, so that each member can call one another by his first name. It was decided that a badge of identification be worn at each meeting.

E. M. Almy, program chairman, introduced the guest speaker, Captain Harry Larsen, 830th Air Force Supply Division of Memphis. "We redistribute material that is no longer needed by the air corps," he stated. "Not that the material cannot be used anywhere, but material in the air corps becomes obso-

(Continued on page 184)

# PLYWOOD

**Pacific Mutual Door Co.**

**National Distributors**

## DOUGLAS FIR PLYWOOD

**Since 1921**

Mills: OREGON, WASHINGTON  
Home Office: TACOMA 1, WASH.

**Six Branch Offices and Warehouses**

CHICAGO 8, ILL.	ST. PAUL 4, MINN.	KANSAS CITY 3, KAN.
GARWOOD, N. J.	BALTIMORE 31, MD.	LOS ANGELES 21, CAL.

WRITE US FOR PRICE LIST AND GRADE USE GUIDE

# Must it "flex"...freely?

## ... AND REMAIN PRESSURE TIGHT?

That's the test. Any number of tubings will give you flexibility alone—even a temporary measure of resistance to pressure. But it's the week-after-week, year-after-year ability to "take it" that cuts maintenance and replacement costs to the bone.

- You get that ability in Titeflex metal hose. You get it because Titeflex is all metal—with nothing to disintegrate. You get it because Titeflex has no packed or sliding joints to

"let go." You get it—because Titeflex is *proved* tubing, proved under punishing conditions, in the toughest of applications.

- From the wide variety of sizes and fittings, you'll find Titeflex exactly suitable to your present and post-war products. A new 36 page booklet—yours for the asking—gives complete engineering data and specifications. At the same time, the Titeflex staff of engineers will gladly give you the benefits of years of research and experience.

TITEFLEX, INC., 521 Frelinghuysen Ave., Newark 5, N. J.





**Aircraft Production Specialists Speed Up Output...**



Official U. S. Navy Photograph

## ...by building standard low-cost DELTA DRILL PRESS units into this ingenious jig...

By hundreds of applications similar to this one at Curtiss-Wright, war industry has tested and proved a new approach to tooling which may save you thousands of dollars in converting to peacetime production:

Instead of getting along with slow, costly methods—or tying up heavy capital in complicated special machines which are slow to build and difficult to adapt—you build your own special set-ups with low-cost stock-model Delta units or batteries.

The trunnion jig in the picture is an excellent example. Equipped with two standard 14" Delta Drill Press heads attached to hinged arms on carriages, it speedily drills over 200 holes on both sides of duralumin shapes, in "matched angles" requiring extreme accuracy. (Details on request.)

For a simple, safe, satisfactory solution of widely varied production problems—with results that are creditable to all concerned—write for "Tooling Tips" and latest Delta catalog.

MA-5

**TEAR OUT AND MAIL THIS COUPON . . . TODAY**

THE DELTA MANUFACTURING CO.  
6430 E. Vienna Ave., Milwaukee 1, Wisconsin

Please send me "Tooling Tips" and latest catalog of your full line of low-cost machine tools.

Name.....Position.....

Company.....

Address.....

City.....(.....) State.....



(Continued from page 182)

lete when models change or for various other reasons, then it is sent to us and we redistribute to any other branch of the armed forces where it can be used."

Captain Larsen explained the methods of redistributing, stating that at the present time the principal use of the supply depot is to redistribute materials and supplies to those users who are directly in the war effort. A catalogue has been issued of all material and machinery that cannot be used in the war effort and has been distributed to civilian industry, who may buy from the depot.

Other officers who made reports were: James Pidgeon, Pidgeon-Thomas Iron Co., vice-president; U. M. Finch, City of Memphis, secretary; and J. R. Whalen, Jr., American Finishing Co., treasurer.

### EDITH GAGE MADE SECRETARY SEATTLE WOMEN'S GROUP

In a recent election the newly formed Seattle Women's Purchasing Agents Group selected as its secretary Edith Gage, Purchasing Agent of Pacific Huts, Inc. Some eighteen months ago Miss Gage was given the responsibility of purchasing the production equipment for a



Secretary Edith Gage  
Seattle Women's Group

plant which was to produce a 16' x 36' building, ready for shipment, every time the clock ticked out ten minutes. That Miss Gage was successful in her job is evidenced by the fact that the plant began production on schedule and that the machinery she purchased and the replacements she was called upon to procure were a vital factor in enabling the firm to keep two months ahead of production schedules.

When commended for her contribution to the company's outstanding production record, Miss Gage replied, "the commendation might better go to the suppliers whose grand cooperation made the speedy procurement of equipment possible."

Miss Gage is now Purchasing Agent for Hobbs Industries, organized by Frank Hobbs after the dissolution of Pacific Huts, Inc., upon the termination of that organization's contracts with the U. S. Engineers. The new organization is licensed to manufacture the Pacific Hut and has completed plans for pro-

(Continued on page 186)



**PURCHASING AGENTS...**

# Always keep in mind

*Combined in the Timken Bearing are ALL the advantages listed here . . . Where else can you find them?*

**HIGH LOAD CAPACITY** — Any desired combination of radial and thrust loads.

**SELECTIVITY** — Over 3,000 sizes and types to choose from.

**ADJUSTABILITY** — To any preload.

**PRECISION** — To the necessary degree for any application.

**FIELD ENGINEERING SERVICE** — Available from strategically located district offices.

**SALEABILITY** — Timken Bearing Equipped Machines preferred and demanded by users everywhere.



A symbol of quality for every piece of equipment with which it is associated.

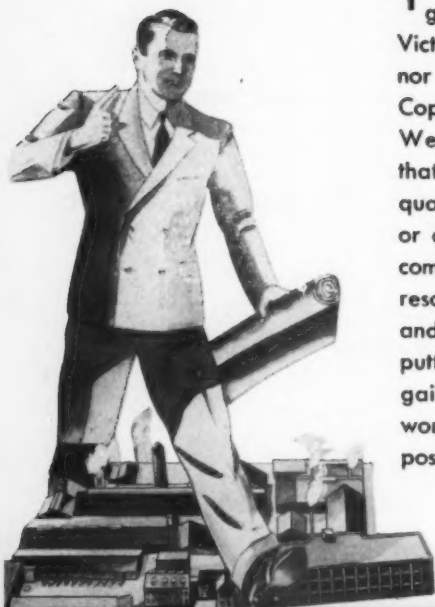
**TIMKEN**  
TRADE-MARK REG. U. S. PAT. OFF.  
**TAPERED ROLLER BEARINGS**

**THE TIMKEN ROLLER BEARING  
COMPANY, CANTON, OHIO**



**COPPER**  
HELPS WIN THE  
BATTLE ON  
EVERY FRONT

*Ready..*  
**TO HELP YOU WIN BACK  
POST WAR MARKETS**



"THE NATION able to supply the greatest quantity of Copper will be Victorious"—for no wars could be fought nor won without Copper. That is why Copper is known as the Victory Metal. We in America have proven to the world that we can supply Copper in the huge quantities needed to decisively win this, or any other war in which America becomes involved! Today, our production resources are working 100% for America and her Allies, and Hussey engineers are putting to good use the "know-how" gained through the terrific pressure of a world at war—in planning for your post-war Copper applications.

**C. G. HUSSEY & COMPANY**

(Division of Copper Range Co.)

Rolling Mills and General Offices: PITTSBURGH, PA.

Warehouses in Principal Cities

(Continued from page 184)

ducing many other war and peacetime products.

At this meeting of the association, Bernice Wood was elected president, Edith Johnson vice president, and Helene Schultz, treasurer.

At the association's February meeting, the Boeing Aircraft Company presented a motion picture "Fortresses in the Sky", and E. William Johnson talked about his experience in purchasing.

1 1 1

#### **OIL MAN ADDRESSES ROCHESTER INDUSTRIAL BUYERS**

Frank W. Lovejoy, sales executive of the Socony-Vacuum Oil Co. addressed the Rochester Assn. of Industrial Buyers at their February meeting Feb. 9, at the Chamber of Commerce.

Discussing the petroleum situation Mr. Lovejoy stated that the task of transporting petroleum and its products for the war effort, was more of a problem than that of procurement. He stated that during the past war the average mechanical h.p. per division was 1700. In this war the average is 300,000 h.p. A bombing mission to Berlin of 1000 Fortresses consumes \$3,000,000 worth of gasoline. A corvette boat going from Norfolk to Portsmouth, Me., consumes 1500 gallons of gasoline. It was stated that the United States is supplying 86% of the petroleum used by the United Nations. The speaker said that the coming invasion of Europe would call for the consumption of huge amounts of petroleum, and that there is a distinct possibility that there will be more severe rationing of these products than has been experienced up to this time. Pipe lines recently finished have greatly increased the flow to the Eastern Seaboard, practically all of the petroleum going to Europe.

Mr. Lovejoy briefly reviewed the history of the Socony-Vacuum Oil Co. He said that in the early days the residue of petroleum was used as a harness dressing and the kerosene was utilized, but the gasoline thrown away.

1 1 1

#### **DISCUSS LATIN AMERICA AT OMAHA MEETING**

W. Earl Hall of Mason City, Iowa, a member of the Iowa State Board of Education, spoke on the observations of a 20,000 mile trip through South America, at the January meeting of the Omaha Association of Purchasing Agents, held in Castle Hotel. He said that in his opinion national self-interest over the long haul will justify what has been spent in Latin America and what must be spent in our endeavor to place our hemispheric neighbors on a higher economical level. "We need Latin America on our side in the future," he said, "but we're not going to have it just by wishing for it. We are going to have it by treating Latins as partners, and the foundations for this essential relationship have been laid in the present policy of inter-American good neighborhood."

(Continued on page 188)

## Free to FIGHT—Because these FIGHTING FILES do EXTRA Work



# DELTA FILES



DELTA FILE WORKS, Inc.  
Philadelphia 37, Pa.

**H**OW MUCH extra? Four Delta Files will do the work of five. Actual scientific tests prove that on the average Delta Files will do 25% more work—in the same amount of time, with the same effort.

Ease your manpower problem? Yes—Delta File does more than its share. And Delta does it better. From tip to tang each greedy tooth sinks deep. Chews fast and clean. Gobbles up the hard metal—in less time with less effort.

Let your workmen work to win. They'll go all out with Delta—the fighting file.

**MAKE THIS TEST:** Clamp a bar (say 1 inch square), upright in a vise. Cut a hole in a sheet of paper to fit over the bar. Take 50 or 100 strokes with a Delta, each side, and collect the filings. Do the same with your present file. Now, weigh the filings. The difference is likely to surprise you.





## "AMERICAN SWISS" Swiss-Pattern FILES

Write their own  
testimonials

At the plant  
of a  
representative

tool manufacturer:

"'AMERICAN SWISS' Swiss-Pattern Files save us 25% to 35% in file costs. It is remarkable the way they stand the hard usage we subject them to."

The experience of this manufacturer has been duplicated in plants all over the country, as proven by reports which we have continuously received throughout the 40 years during which we have specialized in the manufacture of Swiss-Pattern files.

"American Swiss" files save filing costs because these precision-made tools have longer filing surface than others, their clean, sharp teeth cut better and faster, and their uniform hardness withstands hard wear and long usage.

For lowest costs and best results in your accurate and intricate filing work, be sure to insist on "American Swiss" Swiss-Pattern files . . . obtainable from our Distributor.

AMERICAN SWISS FILE & TOOL CO.  
ELIZABETH NEW JERSEY



ASK FOR THEM  
BY THIS NAME

**American  
Swiss**  
SWISS PATTERN FILES

(Continued from page 186)

He made the comment that one of the reasons South Americans are eager to learn English is so that they can understand talking pictures "which are more popular than the North American people."

1 1 1

### "WHY WOMEN LEAVE HOME" MEMPHIS WOMEN'S CLUB

"Why Women Leave Home" was subject of an address by Capt. Lester A. Rosen, Director of Supplies and Purchasing and Contracting Office, Kennedy General Hospital, at the February dinner-meeting of the Women's Purchasing Agents Club of Memphis held at Hotel Peabody. Capt. Rosen centered his talk around what motivates women to leave homes or good positions to don a uniform and do the work they do.

Capt. Rosen stated that he was not recruiting for the WACS, but felt the club would be interested in the work WACS are doing to relieve men for active duty. He took a cross-section of the enlisted WACS at his post and gave an interesting word picture of their activities, their background, education and the type work they did in civilian life.

"So well are these women performing their duties that the men in the field in the U. S. and abroad are requesting WACS and there is a need for many thousands more," he said. "Before the WACS became a part of the army, they were known as WAACS, and there were 77,000 in service. Today there are 63,000 doing an excellent job, enjoying their work and actually releasing men for more serious duties. Of the 14,000 who left the ranks when the army took over, many had joined primarily for glamour or for a husband, and got out when the chance came as they found it was not a matrimony bureau nor a glamour job, but honest-to-goodness work. They were not willing to be subjected to strict army routine."

"Of the 112 WACS at the Kennedy General, exclusive of officers, the ages range from 20 to 50 years. Their education ranges from grammar schools on through college with varying degrees. Many held responsible positions in civilian life. Before going into service the average earning capacity for the group was about \$35 a week. They gave this up for \$50 a month, a uniform, strict routine and plenty of work. I asked them if they thought it worthwhile and each one said, yes—they felt they were doing a real job and rendering a service."

Capt. Rosen stated that many women in uniform are doing the same type of work they did in civilian life. Many others are just out of school or housewives who have had no training. These are being sent to an Army Administration School, where they are being trained for whatever type work they are suited.

Capt. Rosen praised the work the women are doing in the purchasing offices of the armed forces, such as the supply depots, hospitals, etc., as well as in industrial plants.

## do your shovels



**RAZOR-BACK Shovels**  
are 60% thicker at  
these points of wear  
and strain —

17 GAUGE 17 GAUGE  
13 GAUGE  
CROSS SECTION  
Extra Strength Without  
Any Extra Weight



Available  
for Essential  
Needs

THE UNION FORK & HOE CO.  
694 Hocking Street Columbus 15, Ohio  
Also Stone, Ballast, Industrial Forks, Asphalt  
and Road Rakes—Your Inquiry Invited.

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## DO YOU USE WIRE CLOTH STRAINERS?



Michigan Wire Cloth Company  
can assist you in the development  
of the proper strainer design.

Complete manufacturing facilities  
for drawing the wire • weaving the  
cloth • and fabricating the as-  
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WIRE CLOTH CO.

2100 HOWARD • DETROIT 16



# Tap

## I-DOT-IFICATION

### ...AN EXCLUSIVE *Threadwell* FEATURE

You can tell it's a *Threadwell* by the color dot on the shank. Selecting the right tap from tool stock is easy. Using the right tap on the job is certain. But that's only one plus factor when you standardize on *Threadwell* Taps.

You get accurate and long lasting performance. *Threadwell* taps have polished flutes which speed chip removal and minimize breakage.

You get clean, dry, shining taps — never messy or sticky — because *greaseless* rust-proofed.

You get your taps in the *Threadwell* tap-capsule (every ground thread tap in its individual transparent plastic container — dirt-proof, ready for selection without unwrapping.)

You get a tap service tailored to your individual needs by a carefully planned policy of personal attention to your orders at the shop and at your *Threadwell* distributor's.

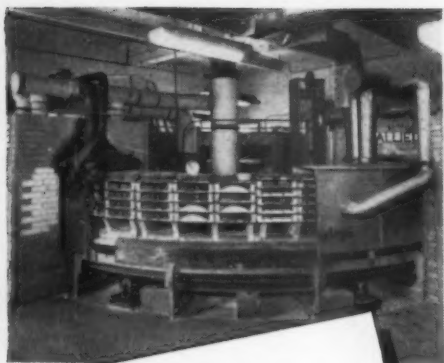
If you're not already in touch with the *Threadwell* distributor nearest you, let us "identify" him and at the same time send you a copy of the new and valuable *Threadwell* Tap Book.

RED  
High Speed Cut Thread  
WHITE  
Commercial Ground  
BLUE  
Precision Ground

DISTRIBUTORS IN LEADING INDUSTRIAL  
CENTERS THROUGHOUT AMERICA  
EXPORT STOCKING DISTRIBUTORS  
CANADA Bridge Machinery Co., Montreal  
ENGLAND Skylux Ltd., London  
and  
John H. Graham and Co., Inc.  
THROUGHOUT THE WORLD

*Threadwell*  
SINCE 1902  
"TAPS OF DISTINCTION"

**THREADWELL** TAP AND DIE COMPANY • GREENFIELD, MASSACHUSETTS, U. S. A.



*Continuous  
Production*  
OF  
**VITRIFIED  
WHEELS**



Vitrified Bonded Wheels are very much in the Cortland production picture — and the Circular Continuous Tunnel Kiln shown here is a step toward better delivery on this type of grinding wheel, in sizes of 16" and smaller. You can depend upon Cortland for quality —and for better deliveries than ever before when you want them.

**CORTLAND GRINDING WHEELS CORP.**  
12 CORTLAND STREET  
CHESTER, MASSACHUSETTS

**CORTLAND**  
**GRINDING WHEELS**

(Continued from page 188)

#### **S. I. WALTERS HEADS NIAGARA PENINSULA ASSN.**

S. J. Walters, Canada Foundries & Forgings, Ltd., Welland, Ont., is the new president of the Niagara Peninsula Branch of the Purchasing Agents Association of Hamilton District. Other officers elected are:

H. H. Mansfield, Jos. Stokes Rubber Co., Ltd., Welland, secretary-treasurer.

Geo. S. Green, Provincial Paper Ltd., Thorold, vice president.

Keyth C. Reece, Canadian Carborundum Co., Ltd., Niagara Falls, national director.

#### **EASTERN NEW YORKERS WITNESS TELECAST**

Following an unusually interesting talk on "Why All This Talk About Electronics" by W. C. White, head of the Electronics Laboratory of the General Electric Co., and a slide-illustrated talk by R. H. Rogers, Industrial Engineering Department, General Electric Co. entitled "Electronics An Established Tool in Industry," at the February 17 meeting of the Purchasing Agents Association of Eastern New York, held in the Hotel Van Curler, Schenectady, N. Y., the meeting adjourned to the studio of Television Station WRGB adjacent to the hotel where a telecast was witnessed.

#### **SCIENCE TURNS DETECTIVE AT BALTIMORE**

Hames M. Hepron, Managing Director, Criminal Justice Commission of Baltimore, was the principal speaker at the February 10 meeting of the Purchasing Agents Association of Baltimore, Inc., which was held in the Lord Baltimore Hotel. Mr. Hepron's subject was "Science Turns Detective."

#### **"MAN-MADE MIRACLE" AT TULSA**

Robert S. Watson, president of Manning, Maxwell & Moore, Inc., Bridgeport, Conn., and director of the National Association of Manufacturers, spoke on "Man Made Miracle—American Enterprise," at the February 8 meeting of the Purchasing Agents Association of Tulsa, Okla., at the Tulsa Club.

#### **SOLDIERS OF THE SOIL NEW ORLEANS**

The February 14 meeting of the Purchasing Agents Association of New Orleans was dedicated to the agricultural industry, and through the courtesy of Messrs. G. W. Sherman and A. S. Randolph, Paint Division, E. I. duPont de Nemours New Orleans Office, a sound movie entitled "Soldiers of the Soil" was shown. It offers dramatic, thought-provoking entertainment by a Hollywood cast under a Hollywood director. Special guests at the meeting were the Hon.

Harry D. Wilson, Louisiana Commissioner of Agriculture, and B. B. Jones, Agricultural Secretary, New Orleans Association of Commerce, who made short talks.

#### **CONTRACT RENEGOTIATION AT BIRMINGHAM**

Rucker Agee, chairman of the Price Adjustment Board of the Birmingham Ordnance District, was the principal speaker at the February 10 meeting of the Purchasing Agents Association of Birmingham in Hotel Redmont. He spoke on the subject "Renegotiation."

#### **MEET WITH SALESMEN AT BUFFALO**

The Purchasing Agents Association of Buffalo, N. Y., held its annual joint meeting of Purchasing Agents and Salesmen February 9 at the Hotel Lafayette, Buffalo. Almost 400 persons were in attendance at the meeting. The principal speaker was Dr. William S. Sims of New York, humorist and after-dinner speaker.

#### **METROPOLITAN CLUB HEARS TALK ON PETROLEUM PRODUCTS**

John B. Tuttle, Engineering Division of the Standard Oil Co. of New Jersey, spoke on "The Shadow of the Derrick" at the February 8 meeting of the Metropolitan Purchasers' Assistant Club, held in Midston House, New York. The talk centered mainly on some of the little known uses of various petroleum products such as paraffin, white oils, etc. Following his talk, Mr. Tuttle presented a film "Bouncing Molecules".

#### **MILWAUKEE HOLDS ANNUAL DINNER DANCE**

An unusually large percentage of the membership of the Milwaukee Association of Purchasing Agents and their wives highly enjoyed the association's annual dinner-dance and get-together, which was held in the Marine Dining Room of the Elks Club, the evening of February 12. The entertainment committee was made up of Elmer Wustrack, chairman, and Fred Callies, Harry Hershheim, and Carl Failmezger.

#### **FOUR-SUBJECT MEETING AT SEATTLE**

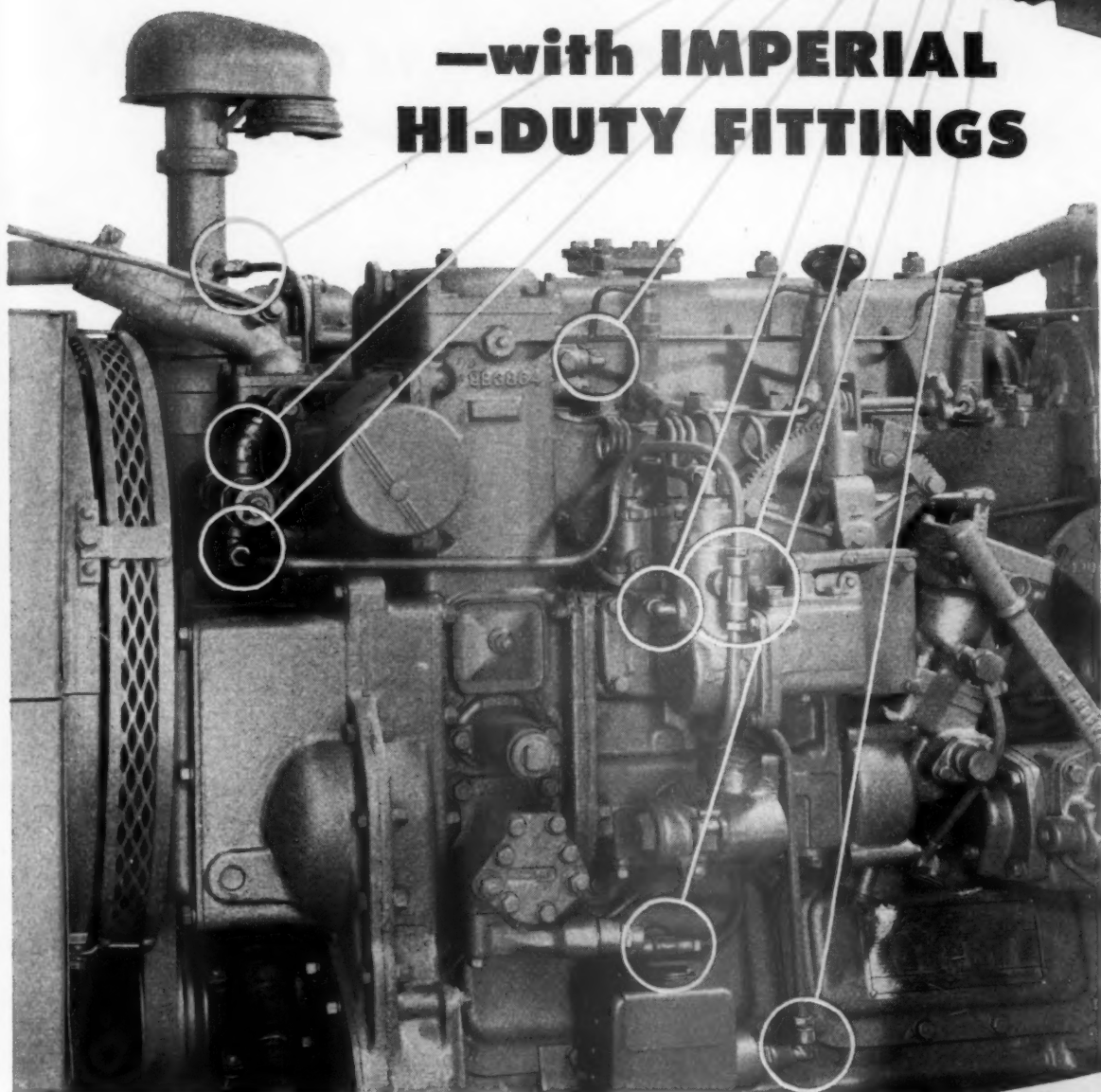
Following a Priorities-Up-to-Date Forum meeting under the direction of Educational Chairman John S. Robinson, and Carl C. Nissler, W. P. B. analyst as counselor, the evening session of the February 10 meeting of the Purchasing Agents Association of Washington, held in the Washington Athletic Club in Seattle, was made interesting by a four-feature program, as follows: "Your Income Tax", a talk by Peter M. Anderson, C.P.A.; "Highlights from War

(Continued on page 194)



# VITAL TUBING LINES STAY TIGHT

—with **IMPERIAL  
HI-DUTY FITTINGS**



★ A well-known tractor manufacturer sought a tube fitting that would simplify assembly of tubing lines, assure tight joints and eliminate vibration breakage in the field.

After careful study and tests, Imperial Hi-Duty Fittings were selected. Hi-Duty Fittings are 2-piece fittings, speedily installed, and under extreme vibration tests have stood up an average of 8 times as long as ordinary compression or flare fittings.

Hi-Duty is just one of many fitting types offered by Imperial. On your tubing connection problems, Imperial's broad experience can often be of assistance.

Bulletin 3101 covers several Imperial Fittings, including Hi-Duty. Write for your copy.

**THE IMPERIAL BRASS MFG. COMPANY**  
512 South Racine Avenue, Chicago 7, Illinois

## IMPERIAL

★ **headquarters for tube fittings**

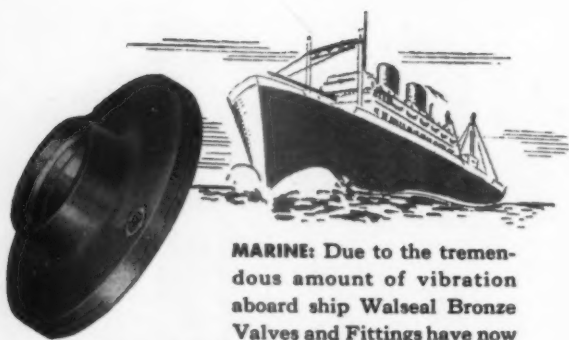
COMPRESSION, S.A.E. FLARE, INVERTED FLARE, HI-DUTY, FLEX  
AND FN FITTINGS FOR COPPER, BRASS, STEEL, ALUMINUM  
AND FLEXIBLE TUBING • SHUT-OFF COCKS • NEEDLE  
VALVES • FUEL STRAINERS • TUBE WORKING TOOLS

# WALSEAL\*

## VALVES, FITTINGS AND FLANGES

*... the best for every type of service*

**WHEREVER BRASS OR COPPER PIPE IS USED**



**MARINE:** Due to the tremendous amount of vibration aboard ship Walseal Bronze Valves and Fittings have now become practically standard for all non-ferrous piping. While under normal conditions there is considerable vibration on shipboard, during war the added shock caused by explosions doesn't affect the Silbraz joints made with Walseal Valves and Fittings.



**BUILDING:** On non-ferrous piping in buildings, Walworth Walseal Bronze Valves and Fittings are being increasingly used. By the use of Silbraz joints made with Walseal Valves or Fittings, costly repairs and shut-downs of pipe lines are eliminated. No properly made Silbraz joint has ever failed.



Silbraz\* joints made with Walseal threadless valves, fittings, and flanges are permanently tight and leakproof — truly make one-piece copper or brass pipe lines. The ring of silver brazing alloy incorporated in each port opening brazes the pipe or tube to the Walseal product when heated by an oxyacetylene flame. The resulting Silbraz joint is stronger than the pipe itself.



**RAILROADS:** With the increased use of Diesel engines the problem of absolutely tight joints, when subject to excessive vibration and wear, on air lines, lubricating oil lines, etc. tight joints are an absolute must. Walseal Valves and Fittings are now rapidly becoming standard on this type of equipment.

Walseal valves, fittings, and flanges are patented products of the Walworth Company, manufacturers of valves and fittings since 1842. The complete line of Walseal products includes types and sizes for every installation where copper or brass piping is used.

For detailed information on the entire line of Walworth products, write on your company letterhead for a free copy of Walworth Catalog 42. It includes 78 pages of engineering information to help you choose the Walworth product that exactly fits your particular service need.

\*Registered trade marks



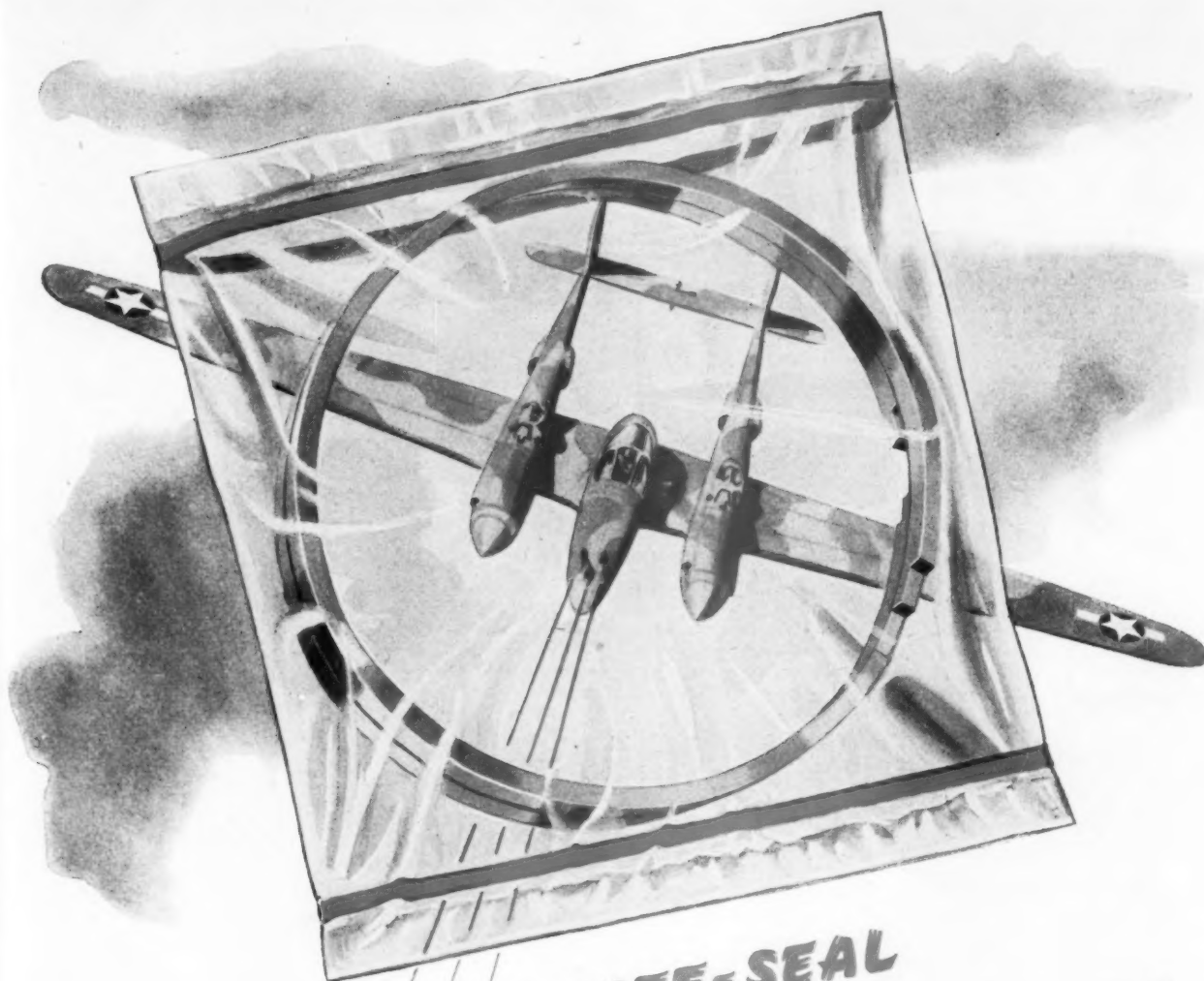
BOSTON WORKS  
KEWANEE WORKS

## WALWORTH

### valves AND fittings

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DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD



## IT'S "IN THE BAG" FOR OUR BOYS

Piston rings in TITE-SEAL Waterproof Cellophane Bags reach fighting fronts in prime condition. So do thousands of other military parts—bolts, bearings, gauges, etc.—for which TITE-SEAL Bags are *approved* Grade A, type III, wrapping material in Packaging Methods 1 and 1A.

Availability is only one reason for TITE-SEAL popularity; visibility is another. One look identifies the contents, sealed against rust and corrosion.

The unmatched advantages of TITE-SEAL Bags proved in war, will protect in peace, parts and articles for shipment and stock.

LOXTITE PARTITIONS • "TITE-SEAL" CELLOPHANE  
BAGS AND LINERS • MULTI-COLOR PRINTED CELLO-  
PHANE AND GLASSINE IN SHEETS OR ROLLS

Patents Applied For



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**LESS  
HEADROOM  
REQUIRED**

## for THIS RELAY . . . .


The WARD LEONARD Midget Metal Base Relay measures only 1 1/4" in height. Its sturdy design permits continuous service on standard AC and DC voltages up to 110-115V. This double pole, double throw relay has the silver-

to-silver contacts characteristic common to all Ward Leonard Relays. Data bulletins are available describing various Ward Leonard Relays. The line is complete. Send for the bulletins covering the Relays of interest to you.



**WARD LEONARD**

RELAYS • RESISTORS • RHEOSTATS

Electric control  devices since 1892.

WARD LEONARD ELECTRIC CO., 50 South Street, Mount Vernon, New York



Accurate, rugged, long-lasting HY-PRO Taps are packed in sturdy boxes separated in trays to protect their precision threads. Package acts as miniature tool box. Complete description on colored labels give exact contents of box for immediate identification and accurate stock keeping.

Send for illustrated catalog on company letterhead.

**HY-PRO TOOL CO.**  
New Bedford, Mass., U.S.A.

475 Mt. Pleasant Street

Buy More Bonds

(Continued from page 190)

Conference at Los Angeles", Arthur J. Hanson, purchasing agent, Sagstad Shipyards; "Diving Around the World", by Bruce Temple, deep sea diver, and a talk by Kenneth Cain, Washington Packers, Inc., Sumner, Wash., on "Latest Developments in Food Products."

At the association's January 27 luncheon meeting, sound technicolor movies entitled "Mr. Beet Goes to Town" were shown through the courtesy of the U. & I. Sugar Company, supervised by Paul Kirker, district manager of the company.

### PAST PRESIDENTS NIGHT AT CHICAGO

George Renard, Executive Secretary of the National Association, was guest speaker at the February 10 meeting of the Purchasing Agents Association of Chicago, in Hotel Sherman. The meeting was dedicated to past-presidents' night, and almost all of the associations past presidents, 28 in number, were in attendance. Several members holding a record of 25 years' continuous membership in the Chicago Association were awarded a 25-year Silver Membership Plaque.

### CONTRACT TERMINATION ST. LOUIS

William Grossman of A. Leschen & Sons Rope Co., spoke on "Contract Termination—the Situation to Date," at the February 14 meeting of the Purchasing Agents Association of St. Louis, which was held in the York Hotel. Other speakers were Wm. C. Krueger, Chairman Commodity Studies Committee, who spoke on "Resume of Recent Developments", and Robt. J. Brockman of the Sefton Fibre Can Co. who discussed "The Container Situation". In addition, the motion picture film "War Department Report" was shown.

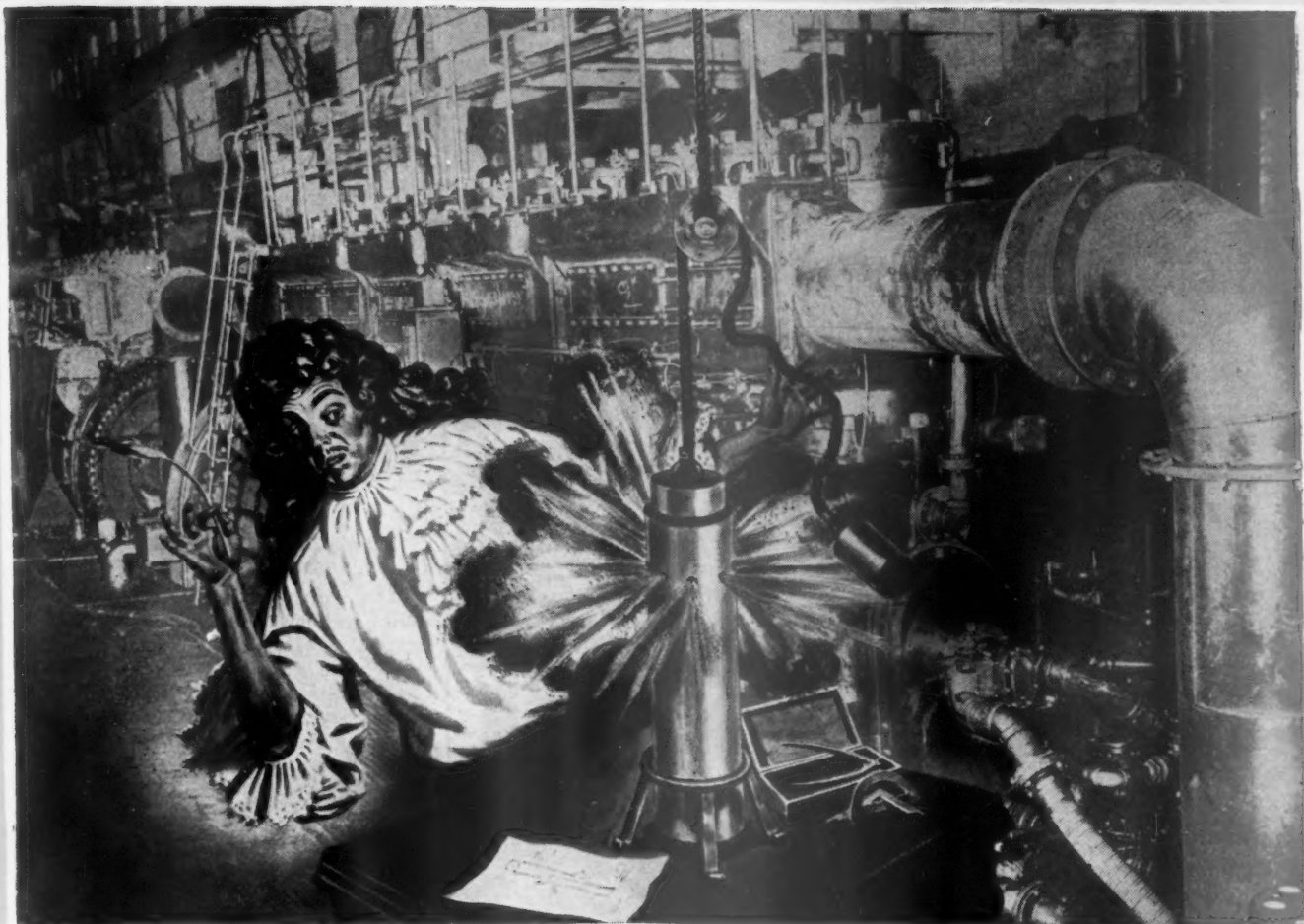
### GEORGE RENARD SPEAKS AT BOSTON

George Renard, Executive Secretary of the National Association was the guest speaker at the February 14 meeting of the New England Purchasing Agents Association, held in Schrafft's, Boston, speaking on the subject "From One P. A. to Another". The afternoon meeting was given over to an address by a Red Cross speaker who presented a film showing the Red Cross in action on the battlefronts.

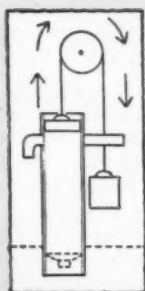
### HUMAN BEHAVIOR DISCUSSED AT PITTSBURGH

The Purchasing Agents Association of Pittsburgh at its February 15 meeting held in the Hotel William Penn, deviated from the usual procedure of meetings devoted to subjects directed to some phase of Purchasing, with an unusually interesting talk by A. W. Leonard, Jr., Director of Human Engineering, Pitts-

(Continued on page 196)



**FAIRBANKS-MORSE**, big name in Diesels—descendants of Huygens' internal combustion engine of 1680—builds 52 models and sizes for the Armed Forces and the home front. Shell supplies both Diesel oil and Diesel fuel.



## POP goes the Diesel

*Christian Huygens, "connecting link between Galileo and Newton," built an engine embodying a cylinder, piston, valves. For fuel he used gunpowder . . . Although*

*structural defects caused the abandonment of this design—and nearly put an end to Huygens—it's the granddaddy of all combustion engines, most efficient of which is the modern Diesel.*

Fairbanks-Morse makes more types of Diesels than any other firm in America. These supply motive power in submarines and PC's for the Navy; in tugs, cargo vessels, tankers for the Maritime Commission and Army. On the home front they're used in industrial and municipal power plants, locomotives and Marine service—for many another use.

Power for the vast Fairbanks-Morse plant is furnished from Diesels on test and in the powerhouse. For these engines Shell Dieseline is used as fuel—a Shell Diesel Oil as the lubricant. Shell Diesel Oil was chosen because of its remarkable performance in keeping Diesels clean, and because Fairbanks-Morse engineers were confident there would be no trouble in test runs due to faulty lubrication.

In tractors, trucks, buses, ships, in all types of Diesels on land and sea, you'll find this same confidence expressed by those who use Shell Diesel Lubricants . . . a confidence founded on the sterling performance of Shell Diesel Lubricants under all sorts of operating conditions.

Know what really dependable Diesel lubrication is—call in the Shell man now.



# SHELL DIESEL LUBRICANTS

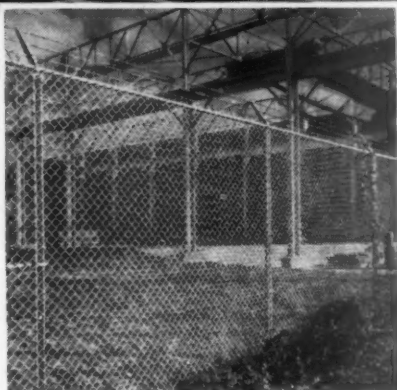


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to  
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● As Page Chain Link Fence safeguards your business, residential or other property, now is the time to have it inspected, and reconditioned if necessary. The protective life of this fence can be extended by the expert servicing of the Page Fence distributor near you. He is a responsible, local business man with technical training and long experience. Consult him about all fence plans—present and future—including fence styles, engineering, erecting, repairs and moving. Write for book, FENCE FACTS, and we will send name of Association member nearest you. Address PAGE FENCE ASSOCIATION, Headquarters: Monessen, Pa.

PRODUCT OF PAGE STEEL & WIRE DIVISION  
AMERICAN CHAIN & CABLE COMPANY, INC., BRIDGEPORT, CONN.

(Continued from page 194)

burgh, on the reasons for effective and ineffective personalities among executives. His subject was "Personal Effectiveness in the Post-War Period."

1 1 1

## LUMBER—MOST CRITICAL MATERIAL—PORTLAND

L. F. Guild, round table chairman, Purchasing Agents Association of Oregon, presented E. J. Bergk, Senior Industry Specialist, Lumber Branch, War Production Board, Portland, Ore., at the February 11th noon meeting of the association, who gave the members an insight into the situation confronting lumber products users in the course of a talk on "Today's Most Critical War Material—Lumber."

1 1 1

## MILWAUKEE ASSOCIATION GUESTS OF ALLEN-BRADLEY

The Allen-Bradley Co., Milwaukee, Wis., was host to the Milwaukee Association of Purchasing Agents for the association's February 8 meeting, which was held in a meeting room at the company's plant. Feature talk of the evening was by Harold E. Brey of the Unit Drop Forge, Division of Fuller Manufacturing Co., whose subject was "A Philosophy Under Control." The talk was supplemented by special entertainment arranged by the Allen-Bradley company.

The March 14 meeting of the association will be Annual Executive Night, at which Wilfred Sykes, president of the Inland Steel Co., is scheduled to talk.

1 1 1

## WAR CONTRACT TERMINATION AT LOUISVILLE

Editor Stuart Heinritz, PURCHASING Magazine, spoke on "War Contract Termination" at the February 15 meeting of the Purchasing Agents Association of Louisville, Ky., the meeting being featured by an unusually large attendance. In addition, the members saw a "realistic and sobering picture of what war really means in the showing of "War Department Report", a forty-three minute official sound picture. Also, Prof. Charles W. Williams of the University of Louisville made a short talk on the current economic situation.

The association reports the death of one of its former presidents, Alexander MacHattie Forrester. He was vice president of the Tobacco By-Products and Chemical Corporation. Mr. Forrester was president of the Louisville Association in 1935.

1 1 1

## P. A. WALKER HEADS HAMILTON DISTRICT ASSOCIATION

P. A. Walker, Canadian Westinghouse Co. Ltd., is the 1944 president of the Purchasing Agent's Association of Hamilton District, Hamilton, Ont. New vice presidents are E. M. Fletcher, Robinson Industries, Ltd. and O. D. Southwick, National Steel Car Corp. Ltd. Treasurer,

(Continued on page 200)



ADDRESSES STAY ON  
when they're

# MARSH STENCIL MARKED

The U. S. Navy uses thousands of stencil cutting machines on ships and shore stations for stencil marking everything from a sailor's clothing to supplies and ammunition.

Here's your marking problem solution . . . STENCIL MARK THE ADDRESS ON EVERY SHIPMENT!

Then, you know: (1) The address won't come off in handling or when exposed to weather. (2) Address is neat, legible, won't be misread by hurried handlers.

You'll find a Marsh Stencil Machine a sound investment. Saves up to \$50 monthly in shipping room time . . . builds good will by getting shipments delivered speedily. Stencil marking is easy . . . you simply place a cut stencil on the shipment . . . stroke with a Marsh Stencil Brush . . . and it's addressed . . . neatly, permanently. Write for booklet and prices. MARSH STENCIL MACHINE CO., 57 Marsh Bldg., Belleville, Ill., U. S. A.

# MARSH

## Use these Marsh Stencil Products!

**STENCIL CUTTING MACHINES.** Three sizes,  $\frac{1}{8}$ ",  $\frac{1}{4}$ " and 1" to meet Government specifications. Of newest design, Marsh Stencil Machines have Hardened Dies and Quick-Replacement Punches.

**FOUNTAIN STENCIL BRUSHES.** Handle holds ink. Button control. Marks 500 stencils without refill. Tips replaceable.

**FELT TIP MARKER.** Writes or prints, addresses, signs, etc.

**STENCIL INKS.** Colors: Black, Red, White, Blue, Yellow, Green. For marking wood, paper, cloth, metal. Bright, permanent waterproof. Meets Government specifications.

**OIL BOARD.** For cutting stencils. Makes clean, sharp stencils, good for several thousand marks.



# Bags Capture Hitler's Helper

From the cloud-smothered Arctic to the seething tropics, Hitler's helper, moisture, seeks to corrode and damage war machines and equipment from the Arsenal of Democracy. But the ingenuity that created American industry has found a way to capture this saboteur...in a bag.

In packing airplane motors for overseas, for example, small cotton bags of silica gel are tied on the motor. Then the whole assembly is sealed in a moisture-vapor proof covering and placed in its shipping case. The bags of silica gel draw dampness from air enclosed with the motor while the covering prevents more moisture from entering. The motor reaches the front rust-free and ready for battle.

Our contribution to this wartime packaging triumph, which also saves thousands of man hours at both factory and front, is the little bag that holds the silica gel. And while it is one of the smallest bags ever turned out by our mass-production facilities, we are proud of the contribution it is making to victory.

In our service to war industry, we are developing new types of bags with scores of new uses. Many of these applications will serve peacetime commerce. If you have a packaging problem, present or future, we may be able to help solve it for you. Won't you let us try?



## CONTRIBUTING TO VICTORY

Mrs. Estelle Oliver, one of 8000 employees in 23 Bemis factories, considers her work a real contribution to victory. She visions the bags she sews at Norfolk, carrying food and vital supplies to her brothers in both the Army and Navy...or thinks of the bags filled with sand protecting her kix in battle.



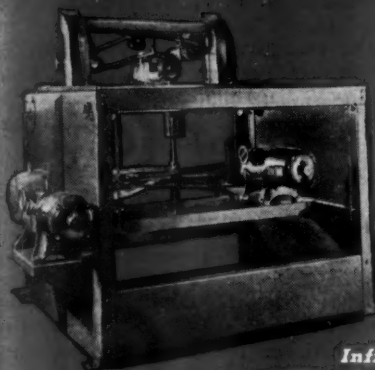
# Bemis Bro. Bag Co.

GENERAL OFFICES: ST. LOUIS • 23 PLANTS THROUGHOUT THE COUNTRY



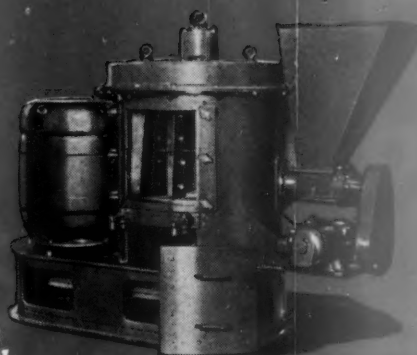
BUY MORE WAR BONDS

207 UNITED STATES WAR BONDS AND STAMPS



Available in sizes up to and including 3 horsepower in three different speed ranges—3 to 1, 6 to 1 and 9 to 1.

Only with an all-metal drive can you secure the compactness, simplicity, flexibility and economy that are so advantageous today.



Infinitely variable speed may be secured to any R.P.M. within the range of the unit. The output speed is increased or decreased by variation of the position of the ring on the two driving and two driven cones.



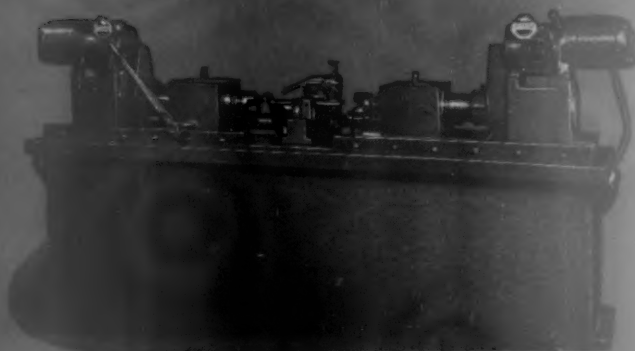
**SPEEDRANGERS**

THE MASTER ELECTRIC COMPANY • DAYTON, OHIO

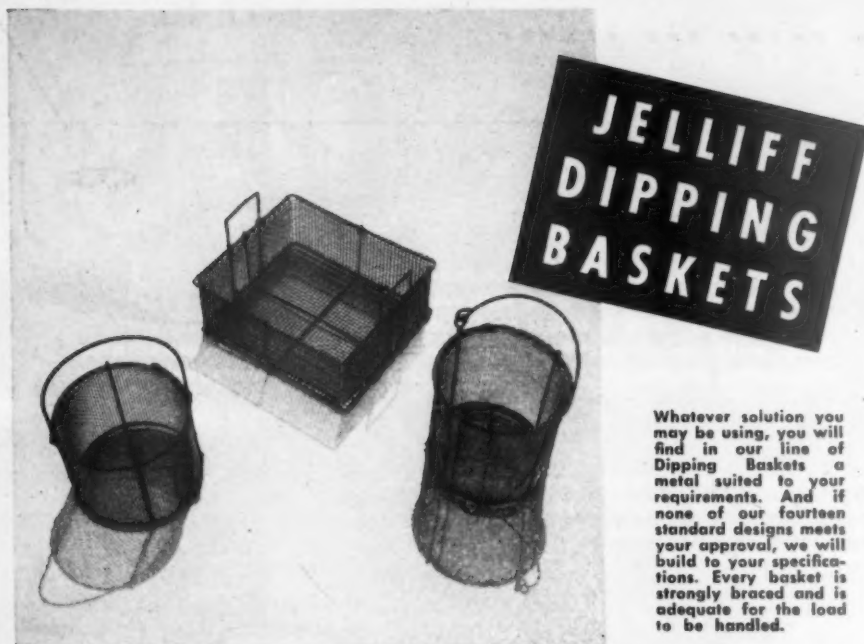


Save material and save space with the simple compact, integrally built Master Speedranger. The all-metal construction insures greatest possible durability and freedom from service interruptions.

Available in the vast number of types that make up the Master line including the flanged type as shown, also gearhead, unibrake, fan-cooled, explosion-proof, splash-proof, multi-speed, etc.







Whatever solution you may be using, you will find in our line of Dipping Baskets a metal suited to your requirements. And if none of our fourteen standard designs meets your approval, we will build to your specifications. Every basket is strongly braced and is adequate for the load to be handled.

The metal to be used in a particular Jelliff basket is determined by the cleaning and pickling cycle. It is obviously impossible to lay down any hard and fast rules, due to the wide variance in such influencing factors as construction of parts, character and strength of solution, methods of handling, temperature, possible galvanic action, etc. If you supply us with these essential facts, we will recommend the basket best suited to your needs.

**The C.O. JELLIFF MFG. CORP.**  
22 PEQUOT AVENUE • SOUTHPORT, CONN.

## JOHNSON *High Carbon Wire*

### Shapes

Round — Half Round — Oval — Square — Flat  
Triangular and Special Shapes

### Finishes

Bright-Coppered — Liquor Finish — Bronze Plated  
Tinned — Cadmium — Bright Galvanized  
Oil Tempered Round — Flat and Shaped Wires



**JOHNSON STEEL & WIRE CO., INC.**  
WORCESTER 1, MASSACHUSETTS.

NEW YORK ATLANTA AKRON CHICAGO LOS ANGELES

(Continued from page 196)

J. F. Stephenson, Kraft Containers, Ltd.; Recording Secretary, R. J. Allen, Wallace Barnes Co. Ltd.; Corresponding Secretary, H. F. A. Witton, N. Slater Co., Ltd.

The executive committee includes D. A. Bartlett, Fowlers Canadian Co. Ltd.; R. G. Geddie, Hamilton Facing Mill Co. Ltd. 1 and E. R. Johnson, United-Carr Fastener Co. of Canada Ltd.

### “CONTRACT TERMINATION” CINCINNATI

Editor Stuart F. Heinritz of PURCHASING led a discussion on “Contract Termination” at the February 16 meeting of the Purchasing Agents Association of Cincinnati, at the Hotel Gibson, Cincinnati.

### DISCUSS SURPLUS MATERIALS AT LUNCHEON MEETINGS

In addition to the stated meetings, members of the Purchasing Agents Association of Rochester, N. Y. have inaugurated noon luncheon meetings, held each Thursday, for the discussion of current and post war material surpluses.

### POST-WAR PROBLEMS DISCUSSED BY NORTHERN CALIFORNIA MEMBERS

The February 17 meeting of the Purchasing Agents Association of Northern California, which was held in the Hotel St. Francis, San Francisco, was the first of a series of meetings to be devoted in the course of the year, to the practical business problems facing the purchasing agent during what is generally termed the transitional period, or reconversion period incident to the cessation of hostilities.

All of the speakers were members of the association, and as will be noted from the following outline of the program, all of the subject matter was quite pertinent to the program objectives:

*The Purchasing Agents' Place in Post-war Planning*, by George Aljian.

*Contract Cancellation*, Robert Hayden.

*Inventories — Industrial*, James MacPherson.

*Inventories—Distributor-Jobber*, Howard Hitt.

*Maintenance, Repair and Capital Outlay*, Russell Hendrick.

*Surplus Material and Equipment*, Lee Weber.

The Oakland luncheon meeting February 1st was given over to a discussion of income taxes by Heber James Brown, attorney. February 3 luncheon meeting of the San Francisco Group was featured by a showing of the war picture “War Department Report”. February 8, “New Developments in Welding and Flame Cutting” was the subject handled by H. W. Saunders, manager of the Air Reduction Sales Co., Emeryville, Calif. February 10, the San Francisco luncheon meeting was featured by a discussion of “Your Income Tax Return for 1944” by Percy Sackett, a tax expert.

February 3, 24 and 25, the members

(Continued on page 202)

# Do it better with Leather.

**L**EATHER is in a class by itself! It has been the answer to many important problems of mechanical application in the past, will solve many more in the future.

Here at Chicago Rawhide—never content to let well enough alone, we are constantly seeking something better, improving old products

and creating new ones, always looking ahead.

That is why—for 60 odd years, leading concerns, both large and small, have come to us with complete confidence. They know that our engineering, research and production experience assures them of the most efficient and best possible products for their specific requirements.

## Interesting Chicago Rawhide Products



*Boot or dust cover—used on tie-rod joint on automobiles and trucks to exclude dirt, sand, grit, etc. Designed to take both rotating and angular movement.*

*Anti-squeak or anti-rattler cover that acts as a gasket—used on goose-neck type of fuel tube on military trucks.*

*Ear phone cover of retanned leather—used by pilots, navigators, radiomen, etc.*

## CHICAGO RAWHIDE MANUFACTURING CO.

*Established 1878*

*Manufacturers of Leather and Synthetic Rubber Products for Mechanical Application*

**1301 ELSTON AVENUE, CHICAGO, ILLINOIS**

DETROIT • NEW YORK • PHILADELPHIA • LOS ANGELES • PITTSBURGH • BOSTON • PEORIA • SYRACUSE • CLEVELAND • CINCINNATI

## SIX MONTHS' TEST PROVES Boots Nuts Eliminate Periodic Tightening

"The sample Boots Nuts which you supplied have now been in use on several of our vehicles, both light and heavy, for a period of six months.

We selected two difficult spots for their application, drive shaft universal joint flanges and chassis spring U-bolts. At

these points plain nuts are not satisfactory unless a lock washer or jamb nut is used to hold them. Even so, they require periodic tightening.

The Boots Nuts in use have not required any attention since they were installed."

Signed, UNITED PARCEL SERVICE



A portion of the 2900-truck fleet of United Parcel Service trucks serving 16 metropolitan cities

THIS report of a test made by the country's outstanding consolidated delivery company, operating in sixteen cities, is a clear-cut indication of the economies that Boots All-Metal, Self-Locking Nuts will effect in the transportation field after victory.

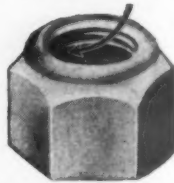
One piece, all-metal, Boots withstand the corrosive action of oil, water and chemicals. There's nothing to dry out, crack or shrink. Also, Boots Self-Locking Nuts can be used over and over without accelerated locking loss.

### BOOTS SELF-LOCKING NUTS

*"There's No Excuse for a Nut Shaking Loose"*

Boots Aircraft Nut Corp. • General Offices, New Canaan, Conn.

The ALL-METAL lock is built in here



ROL-TOP. This style nut, now used on all types of aircraft engines, is the type of Boots All-Metal, Self-Locking Nut mentioned in the above letter.

## CELLOPHANE and ACETATE

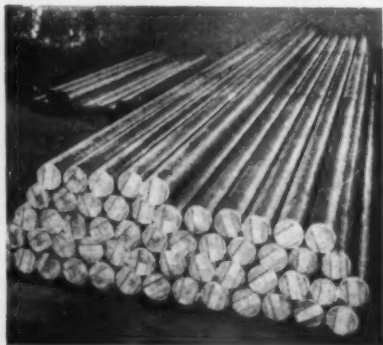
### Your Odd Lots Bought



R. W. Busse

389 Lafayette St.

New York 3, N. Y.



### Welded Stainless Tubing

4" to 14 3/4" O.D.

Uniformity in roundness and in quality of welding characterizes Pittsburgh Piping Welded Stainless Tubing. Available in most stainless alloys, in sizes 4" O.D. to 14 3/4" O.D., and in wall thicknesses ranging from 7/64" to 1/2". Write for data sheet.

PITTSBURGH PIPING & EQUIPMENT CO. 10 FORTY-THIRD ST., PITTSBURGH, PA.

(Continued from page 200)

took part in the Second Annual War-time Conference of the California State, County and Municipal Purchasing Agents' Association, at Hilton Hotel, Long Beach, Cal.

February 29, the Oakland group saw "Silent Village", a film of the village of Lidice at the Hotel Lemington.



### "BATTLE FOR THE BEACHES" NEW FILM NOW AVAILABLE

"Battle for the Beaches" a swift moving film preview of the all-out invasions that will pave the way to Berlin and Tokyo is now available.

The picture which will be available in both 16mm. and 35mm. and will run approximately 25 minutes is narrated by Quentin Reynolds, ace war correspondent.

Produced by the Motion Picture Section of the Industrial Incentive Division, U. S. Navy, the "Battle for the Beaches" is based on actual combat scenes, many hitherto unrevealed. It vividly portrays the high cost of men and materiel involved in storming the enemy beaches.

Heroes of "Battle for the Beaches" are the gallant, well trained, fighting men of the U. S. Army, Navy and Marines, and thousands of landing crafts of all types and their component parts which make these landings possible.

The picture traces the many amphibious operations to date that have turned the course of the war to the favor of the United Nations — Bougainville, Lae, Guadalcanal, Salerno, and Bloody Tarawa. It also shows captured German film depicting the Nazi version of the Dieppe "Dress Rehearsal" which was witnessed from the British side by narrator Reynolds.

War plants desiring to exhibit "Battle for the Beaches" should write to the Industrial Incentive Division, U. S. Navy, 2118 Massachusetts Avenue, NW, Washington 25, D. C. A nominal rental charge is made for the film.



### MOVING PICTURE FILMS FOR INDUSTRIAL SHOWINGS

Following is list of industrial educational films, and names of companies issuing them:

"Abrasive Wheels, Vital Tools of Industry," Abrasive Co., Tacony and Fraley Sts., Philadelphia 37, Pa.

"Hypressure Jenny Steam Cleaner," Homestead Valve Mfg. Co., Coraopolis, Pa.

"The Making and Shaping of Steel;" "Steel—Man's Servant;" "USS Cor-Ten;" "Steel for Victory;" "Bridging San Francisco Bay;" and, "Lake Carrier." United States Steel Corp. Subsidiaries, Film Distribution Centers, C. N. Schmidt, supervisor, American Steel & Wire Co., Rockefeller Bldg., Cleveland 13, Ohio.

"Enduro Stainless Steel;" "War Show;" and, "Women of Steel," Re-

(Continued on page 206)



# Within Easy Reach... EVERYWHERE!



## **Foxboro Branches in 30 Cities Insure Speedy Instrument Service!**

No matter where your plant is located in the United States or Canada, there is a Foxboro Branch nearby, to give you prompt service in obtaining the best in instrumentation!

At thirty Branch Offices in principal cities, engineering counsel and expert maintenance and repair service are always available... also stocks of parts and new or exchanged instruments, at many points. In addition, four Branch Factories\* in strategic cities furnish complete assembly, repair and overhaul service using genuine factory-made parts, exactly as it

would be done at the Main Factory!

Here's a combination of advantages you can't afford to overlook! A complete line of indicating, recording and controlling instruments of the most advanced, efficient design... PLUS on-the-spot service to supply the right instrument when you need it! Write for information on any phase of instrumentation that you may require.



RECORDING • CONTROLLING • INDICATING •

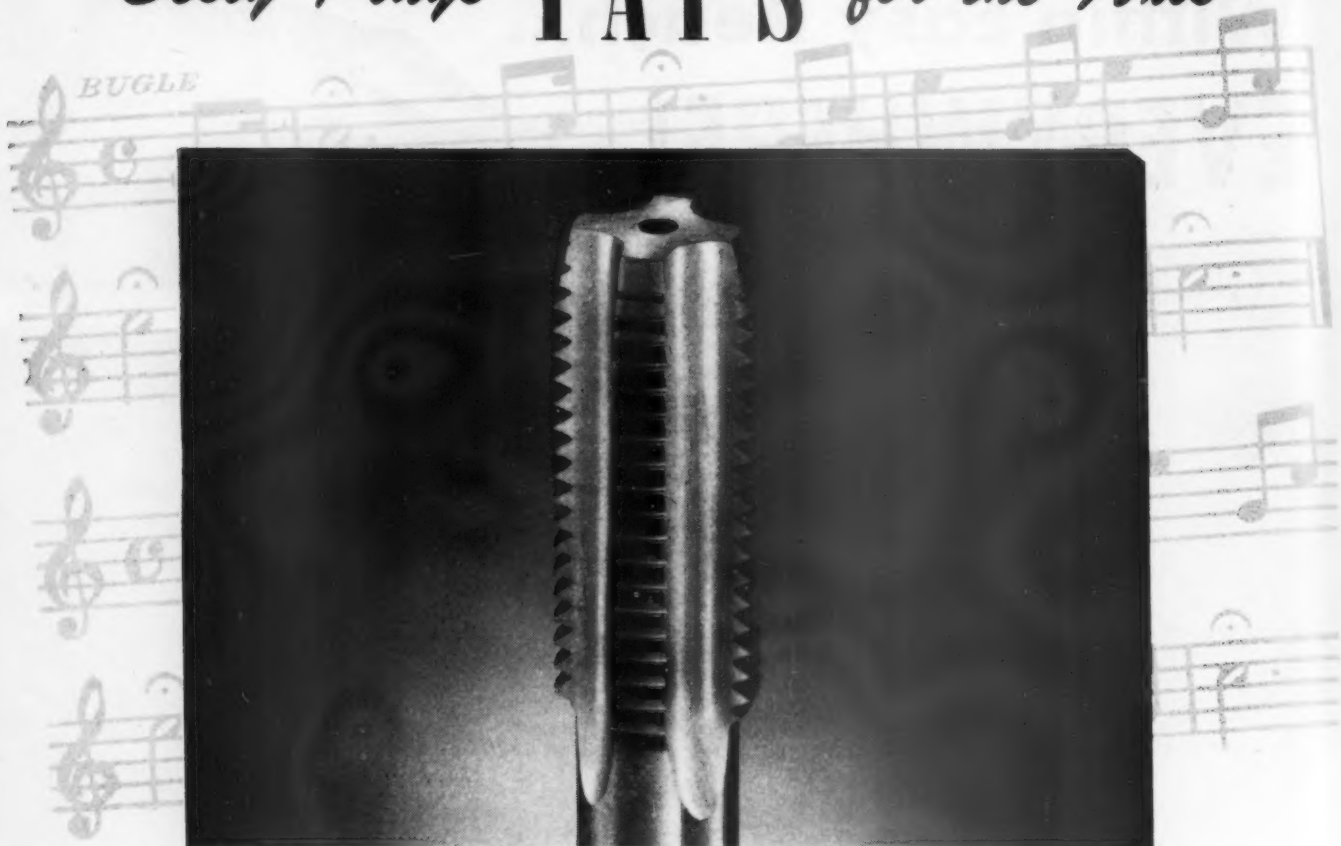
★THE FOXBORO CO.  
178 Neponset Avenue,  
Foxboro, Mass., U. S. A.

ATLANTA, GA.  
BALTIMORE, MD.  
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☆CHICAGO, ILL.  
CINCINNATI, OHIO  
CLEVELAND, OHIO  
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DENVER, COL.  
DETROIT, MICH.  
HOUSTON, TEXAS  
☆LOS ANGELES, CAL.  
☆NEW ORLEANS, LA.  
NEW YORK, N. Y.  
☆PHILADELPHIA, PA.  
★PITTSBURGH, PA.  
PORTLAND, ORE.  
ROCHESTER, N. Y.  
ST. LOUIS, MO.  
ST. PAUL, MINN.  
SALT LAKE CITY, UTAH  
★SAN FRANCISCO, CAL.  
SEATTLE, WASH.  
SHREVEPORT, LA.

•CANADA•  
PEACOCK BROTHERS  
LIMITED  
CALGARY  
★MONTREAL  
SYDNEY  
TORONTO  
VANCOUVER  
WINNIPEG

★ Factories  
☆ Repair Shops

# Besly Plays TAPS for the Axis



★ ★ ★ The outstanding performance of Besly taps is helping make new wartime production record—hastening the day of reckoning for the enemy.

Besly engineers have played a prominent part in helping Besly Taps to set these records. Daily, more experienced production men are learning to call on Besly engineers to advise them on new problems of tapping steels and non-ferrous metals.

If you are confronted with tapping problems new to you, feel free to call on us. Our engineers backed by over 30 years' experience in designing and manufacturing taps, will help, you as they have so many others. *Write us today.*

A check of all reported Army-Navy "E" winners shows that more than 20% of these companies are Besly customers. Charles H. Besly and Company, themselves, were awarded the Army-Navy "E" on December 1, 1943.



Write for Catalog No. 67—a compendium of useful knowledge for tap users.

## BESLY

BESLY TAPS • BESLY TITAN ABRASIVE WHEELS  
BESLY GRINDERS AND ACCESSORIES

CHARLES H. BESLY AND COMPANY • 118-124 N. CLINTON ST., CHICAGO 6, ILL. • FACTORIES: BELOIT, WIS.



**When we take on** a plastic molding job here at General Industries, we work everlastingly hard to fulfill every commitment. And we have the experience and the facilities to make good on our promises.

**Raw plastic** material in a barrel is much the same to any molder. It's the way that material is put to work that spells the difference between competence and incompetence. Equipment is important, of course, but it's available in ordinary times to any molder. What isn't so readily obtainable is that intangible ingredient of experience.

**One place where** that experience is mighty important is in the making of molds. Micrometer tolerances, inserts, thin and thick sections, polished surfaces, openings in several directions...all these call for a skill and knowledge that will make the most practical mold for the specific job. That's the kind of experience that isn't gained overnight—that isn't available unless the molder has met and defeated similar problems before.

**We have** that experience here at General Industries—obtained from molding of plastic parts

by the millions—in widely varying shapes, sizes and materials. Naturally, we have the necessary presses to turn out the work according to specifications and schedules.

**So,** we suggest that when Uncle Sam finishes the important work in hand, and the urgent pressure is off, you bring your plastic problems to General Industries. You'll find here the facilities and the experience which are so important to your product. And you can take it from us, we won't let you down.

THE

GENERAL  
INDUSTRIES  
COMPANY

**MOLDED PLASTICS**

*Molded Plastics Division • Elyria, Ohio*

Chicago: Phone Central 8431  
Detroit: Phone Madison 2146

Milwaukee: Phone Daly 6818  
Philadelphia: Phone Camden 2215



SIMPLICITY OF DESIGN MEANS EASIER MAINTENANCE

# GOOD VALVE CARE is just good business

NOW, especially, when the demand for valves is taxing deliveries, it is imperative that you make your present valves last longer and serve better.

It's a challenge to every maintenance man to keep an eagle eye on the valves he now has in service . . . to see that they are checked and serviced regularly and thus forestall, as far as possible, the need for new valves.

Lunkenheimer Valves are easy to keep in good condition. Simplicity of design, with a minimum of working parts, makes them readily accessible for inspection and maintenance follow-up.

Let your Lunkenheimer distributor help you with your maintenance, repair and operating problems. His facilities and experience are at your call.

ESTABLISHED 1882  
**THE LUNKENHEIMER CO.**  
"QUALITY"  
CINCINNATI 14, OHIO, U.S.A.  
NEW YORK 13 CHICAGO 6  
BOSTON 10 PHILADELPHIA 7  
EXPORT DEPT. 318-322 HUDSON ST., NEW YORK 13, N.Y.



## LUNKENHEIMER VALVES

(Continued from page 202)

public Steel Corp., Republic Bldg., Cleveland, Ohio.

"Norton Abrasives;" "Norton Grinding Wheel Markings;" "Offhand Grinding with Norton Abrasives;" "Norton Abrasives in Tool Grinding;" "Precision with Norton Abrasives;" "Cutter Sharpening;" "The Grinding Wheel—Its Care and Use;" "The Cylindrical Grinder;" and, "The Surface Grinder." Norton Company, Worcester 6, Mass.

"Steel for the Armed Forces"—Part 1 "How Steel is Made," Part 2, "Steel Treating and Testing." Bethlehem Steel Co., Bethlehem, Pa.

Design, brazing, application and grinding of carbide tools. Set of 6 films available to industry at the approximate print cost of \$20.00 per set. In this way, each plant may incorporate these films as a permanent part of its training program. Carboloy Co., Inc., Roosevelt Park Annex, Detroit 32, Mich.

Film on incentive and morale building. The S. K. Wellman Co., 1374 E. 51st St., Cleveland 3, Ohio.

Group of three pictures, produced for the Army for use in training Motor Transport Corps mechanics. One is on drills, one is on bench and portable grinders, and the third is on valve refacers and valve seat grinders. Black & Decker Mfg. Co., Towson, Md.

### GENERAL ELECTRIC MOTION PICTURES

Special catalog, GES 40 2 J, of General Electric Co., Schenectady, N.Y. lists and describes sound and silent educational and commercial films, which are lent free provided the exhibitor agrees to pay the transportation charges.

### WPB-OPA DIGEST

**CMP Rules Clarified—WPB**—Rules governing use of controlled materials after they are received by manufacturer have been clarified in amendment to CMP Reg. No. 1, which deals with basic CMP allotment procedure.

**Cellophane Order Revised—WPB**—Announcement is made of revision of cellophane limitation order designed to tighten order in some respects and to provide relief in cases of extreme hardship where substitutes have been tried with unsatisfactory results. (Amendment to L.O. L-20).

**Wrapping Paper Supply Short—WPB**—Retail shoppers must expect to do with fewer package wrappings this year, because war shortage of wood pulp for paper making will not permit normal supply of wrapping paper and bags, according to Arthur D. Whiteside, WPB Vice-Chairman for Civilian Requirements.

**Brass Tubing Restricted—WPB**—Manu-

(Continued on page 208)

# "UNIVAN"

That Tough Steel



## *Tougher* than a Century of Storms

Ancient and battle-scarred, this defiant old tree still stands up against nature's worst. That takes *toughness*—the kind of toughness and long life you'll find in "UNIVAN". Castings made from this Alloy steel scientifically heat-treated have proven in countless applications that they can absorb heavy shock and severe stresses with notable lack of fatigue. Where the going is tough specify "UNIVAN"—that tough steel. Make use, too, of Union's long experience in fabricating intricate designs.



For Long Life with Economy  
Specify "UNIVAN"—that Tough Steel

## UNION STEEL CASTINGS

DIVISION OF  
BLAW-KNOX CO.  
PITTSBURGH, PA.

**MAKERS OF** Driving Wheel Centers, Locomotive Frames, Pump Casings, Vault Doors and Frames, Annealing Boxes, Spindles, Coupling Boxes, Open Hearth Charging Boxes, Gear Blanks — and other Castings for Steel Mills and General Industry.



Helping you to buy  
**FASTENERS—**  
*Cleveland's*  
4 Branch Warehouses

**CHICAGO**  
726 W. Washington Blvd., HAYmarket 1392

**PHILADELPHIA**  
12th and Olive Sts., POPlar 7530

**NEW YORK**  
47 Murray St., BARclay 7-5088

**LOS ANGELES**  
1015 E. 16th St.  
PROspect 8326



**CLEVELAND  
FASTENERS**

*The Cleveland Cap Screw Company*  
2917 EAST 79TH STREET • CLEVELAND 4, OHIO  
Warehouses: Chicago, Philadelphia, New York, Los Angeles



**PLASTIC  
NAME  
PLATES**

DIAL-FACES  
CHARTS, SCALES  
CALCULATORS  
Patent Notices  
Instruction Plates  
Markers, etc., etc.

**LAMINATED  
for Permanence**

SAMPLES AND ESTIMATES  
CHEERFULLY SUPPLIED

Dept. NP  
**HOPP PRESS  
INCORPORATED**  
460 W. 34th Street  
New York, N.Y.

**RED TYE  
PARTS BAGS**

*On the Spot  
WHEN  
NEEDED!*



Make sure that small parts, accessories and replacements are on the spot when needed by putting them in a Chase Red-Tye Parts bag and attaching them right to the product. Avoid irritation and loss of time caused by overlooked or mislaid parts.

Chase Red-Tye Parts bags are available in many types and sizes... with or without tags or envelopes attached for letter, invoice or instruction sheet.

*Write for samples and prices. Also inquire about Chase Red-Tye mailing bags... for the quick, safe delivery of small replacement parts.*

**CHASE BAG CO.**  
302 EAST PITTSBURGH AVE., MILWAUKEE, WIS.  
ONE OF THIRTEEN GREAT FACTORIES

(Continued from page 206)

facture of new brass or copper tubing, pipe or fittings for installation in gas supply and gas distribution systems has been prohibited. (C.O. M-9-c, as amended.)

**Idle Steel—WPB—**Producers and distributors of steel, who have off-grade or rejected steel or idle and excess inventories of steel which they are unable to move under CMP Regulations, may apply to WPB for permission to dispose of such material.

**Steel Plant Expansion Curtailed—WPB—**Termination of work on seven more steel plant expansion projects in four states, estimated to cost nearly \$97,000,000 has been recommended to the Defense Plant Corporation.

**Aluminum for Peace Uses—WPB—**New policy permitting use of aluminum for post-war experiments announced. Heretofore, Aluminum and Magnesium Division of WPB has refused requests for allocations of light metal for experiments to work out models for civilian goods after the cessation of hostilities. All grants of materials in application of new policy will be carried out within provisions of Aluminum C.O. M-1-i which controls allocation and use of aluminum and its products.

**Anti-Freeze Saving Urged—WPB—**Importance of conserving supplies of motor vehicle anti-freeze for 1944-1945 winter season is stressed by Industry Advisory Committee on Anti-Freeze.

**Sesame Oil Rationed—OPA—**Sesame oil, high grade vegetable oil used in making food and some types of drugs and pharmaceuticals, has been placed under rationing. (Amendment 101 to R.O. 16.)

**Alloy Tool Steels—WPB—**WPB has moved along broad front to relax restrictions on manufacture of alloy tool steels and heat resisting steels and use of electric furnace facilities.

**Carbon Steel Eased—WPB—**Manufacturers of conveying machinery and mechanical power transmission equipment will now be permitted to use small amounts of carbon steel in fabrication of such equipment in place of substitutes formerly employed. (L.O. L-193, as amended.)

**Priority Assistance—WPB—**Business firms and individuals who normally apply for priority assistance on WPB Form 541 (Formerly PD-1A) for acquisition of equipment or materials other than controlled materials, have been warned by WPB that only applications made on new revised version of that form will be considered.

**Copper Scrap Pricing—OPA—**Ceiling price changes designed to facilitate movement of copper scrap and copper alloy scrap to ingot makers and copper refiners

(Continued on page 210)





**RIGID**  
Pipe wrench  
sizes are  
6" to 60"

**RIGID**  
**HOUSING**  
*doesn't break*



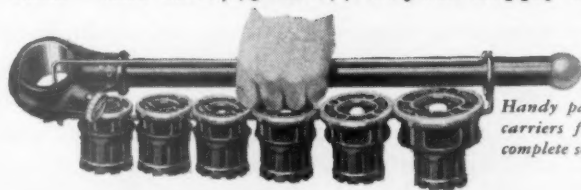
Heads snap in  
and lock...from  
either side

**Handy little  
THREADER  
that's a big  
work-saver  
RIGID  
NO. 00R**

## So... no repairs — no repair expense — no wrenches out of use

● When you use **RIGIDS**, you don't need so many spares around — for these wrenches usually last till you lose them. Ask any of the millions who use them. They'll tell you also that the full-floating hookjaw and the adjusting nut *always* work freely, never bind. The no-slip jaws, handy pipe scale on hookjaw and comfort-grip I-beam handle are also things you'll like. For economy and easier work, buy the **RIGID** — at your Supply House.

● Its popularity comes from more than its popular price. For this small **RIGID** Ratchet Threader, 1/8" to 1" pipe capacity, has many time-and-work saving features you like — heads that snap in from either side and lock; dies that reverse quickly for close-to-wall threading. Dies are of tool steel, accurately ground, easily removed for regrinding. Special conduit dies, if you want them. It pays to ask for No. 00Rs — also 111R, 1/8" to 1 1/4" at your Supply House.



Handy pat'd wire carriers free with complete sets.

Sold by Supply Houses Everywhere

**RIGID**  
★ PIPE TOOLS ★

Millions of **RIGID** Tools in use



THE RIDGE TOOL COMPANY  
Elyria, Ohio, U. S. A.





## How A BOWSER FILTER IN AN INDIANA PLANT

*Tripled Tap Life and Paid  
for Itself in 30 Days...*

An Indiana plant now devoted to war work had a bottleneck—taps. Taps used in the production of 20 mm. shells were wearing out too fast... steel particles in the cutting oil chewed them up. New taps were scarce. And expensive. Changing taps wasted time and redressing wasted still more. Rejections and scraps were tragically high. No fooling, it was a bad situation.

A Bowser Pressure Filter was installed. Complete elimination of the abrasive in the oil promptly tripled the life of the taps and, of course, cut changing and redressing costs to one-third.

That's not all. Scrap shells, due to faulty tapping, were virtually eliminated. Rejections, due to undersized threads, were reduced 85 per cent. *And plant executives figured that the filter paid for itself in less than thirty days.*

Filters are only one of the many types of Bowser equipment that, chances are, would make your plant operation more efficient, more productive, more economical. There are, for instance, Bowser meters, proportioners, lubrication units, pumps, stills, oil conditioners... with indispensable applications in virtually every plant. *Wherever liquids are handled, there's a need for something that Bowser makes.* BOWSER, INC., Fort Wayne, Indiana.



BUY WAR BONDS



LIQUID CONTROL SPECIALISTS SINCE 1885

(Continued from page 208)

have been announced by OPA. (RMPR-20.)

**New Copper Control—WPB**—To streamline regulations governing copper raw materials, new copper order (M-9) has been issued by WPB.

**Frozen Tubing Freed—WPB**—Frozen inventories of copper and copper base alloy pipe, tubing and fittings in hands of utilities have been freed for use in underground gas and water supply and distribution installations outside buildings. (Supplementary C.O. M-9-c-4, as amended.)

**Maritime to Use M-1—WPB**—Maritime Commission will use single allotment number M-1 to identify all ship construction programs.

**Glass Container Rule—WPB**—Provisions of order setting up 1944 quotas for new glass containers and metal closures which relate to prohibited sizes and non-listed items (that is, items which may not be packed in glass), were scheduled to go into effect March 1.

**Cutlery Control—WPB**—Minor restrictions pertaining to use of rivets and bolsters for professional food processing and kitchen cutlery as well as for household kitchen and table cutlery have been removed. (L.O.L-140-a, as amended.)

**OPA Forms Simplified**—Simplification and condensation of forms on which corporations are requested to make annual and quarterly financial reports have been announced.

**Glue Stock Restricted—WPB**—To channel all hide trimmings and fleshings into production of glue, WPB has forbidden use of certain types of gluestock for production of gelatin, edible or inedible, and use of other types of raw stock in fertilizer and other products for use in agriculture. (Part 3293 or M-368).

**Lumber needs—WPB**—More than 34,000,000,000 board feet of lumber will be needed to meet war requirements of nation in 1944.

**Electric Fans—WPB**—Members of Domestic and Commercial Electric Fan Industry Advisory Committee emphasize that no production of electric fans for retail sale to civilians can be resumed, and production of fans for essential industrial and hospital purposes cannot be increased.

**Southern Pine Pricing—OPA**—Number of changes in mill ceiling prices for Southern pine lumber, designed principally to permit production of types of material needed in war program, have been announced by OPA.

**Fence Post Pricing—OPA**—Railroads and other industrial consumers will pay materially less for fence posts under price

(Continued on page 212)

*kay'd in  
1 minute*

## SQUEEZ-GRIP

*gives carbon dioxide  
a shot in the arm...*



● Carbon dioxide, always a fast non-damaging fire extinguishing agent for certain types of fires, is now stepped-up to terrific fire killing speed with the new C-O-TWO SQUEEZ-GRIP type valve for portable extinguishers. Before C-O-TWO engineers developed the SQUEEZ-GRIP valve the procedure when using a hand-wheel portable was: Pick up the extinguisher, carry it to the fire, then set it down and turn the wheel to open the valve, then pick up the portable again to extinguish the fire, then set down the portable and turn the hand wheel to close the valve. Slow and wasteful! With the SQUEEZ-GRIP valve there is no need to set the extinguisher down to operate it. You can release precious carbon dioxide gas as fast as you can close your hand. The squeeze of your hand plasters the fire—releasing the hand pressure stops the discharge of carbon dioxide.

● SQUEEZ-GRIP Saves Time and Gas, It's Safer, It's Faster.



# C-O-TWO FIRE EQUIPMENT COMPANY

NEWARK 1, NEW JERSEY

*Sales and Service in the Principal Cities of United States and Canada*



# JOMAC

## HEAT-RESISTING GLOVES

(and Long-Wearing, too!)

A special pile-knitting machine is used to achieve the remarkable Jomac Fabric which is helping to lick the many hot and heavy jobs in America's busy shops and foundries. This fabric is a loop-finished cloth that is thick with air-cells which dissipate heat. Jomac's "cushion" loops give added life and wear . . . allow breathing-space . . . make a sturdy, protective glove that allows constant handling of metals too warm to touch.

Jomac Gloves are washable, too. They can be laundered repeatedly, kept clean . . . and thus minimize the dangers of dermatitis and other skin infections.

(Jomac also makes the Regular Work Gloves—these are semi-heat-resisting.)

### TEST THEM!

Just try JOMAC GLOVES on your stiffest jobs. Test them for heat-resistance, for wear, for washability, for economy, for increased production. Write for full details.



**JOEY ON-THE-JOB SAYS . . .**

"When they push a hot handling job my way I always give JOMAC a big hand!"

**JOMAC INDUSTRIAL GLOVES**

**C. WALKER JONES CO.**

6135 N. Lambert St., East Germantown, Philadelphia 38, Pa.

(Continued from page 210)  
action, Amendment 2 to RMPR 324.

**Envelopes—WPB**—Exceptions as to weights of paper which may be utilized for commercial envelopes were clarified by WPB in Interpretation No. 1 to Schedule VII of G.L.O. L-120.

**Paper Cups—WPB**—Paper cups and food containers for in-plant feeding may be secured by use of MRO ratings until May 1, 1944, or through appeals, under an amendment to Direction No. 2, to Priorities Regulation No. 3, announced by WPB Containers Division.

**Contract Changes—WPB**—New administrative order providing for recording and distributing information on contract terminations and procurement program adjustments, to be channeled to appropriate government agencies for their use, is announced by WPB. G.A.O. No. 2-139 provides for setting up procedure.

**Civilian Products—WPB**—Announcement made of few relaxations of restrictions on use of iron and steel for various civilian products. Iron and steel were unobtainable because of prohibitions contained in C.O. M-126. To remove this conflict, M-126 has been somewhat modified. Amended order permits the use of iron or steel in the manufacture of automotive accessories permitted by L.O. L-158 as truck replacements or in new trucks. Also permitted under the amended order is metal for: automotive heaters, hose reels, grease guns, grease pumps, oil pumps, 140 tons of steel wire for hat brims, cigarette lighters, motion picture projectors, motion picture sound producing equipment, window shade rollers for street cars and buses, and stencils.

**Mercury Control Eased—WBP**—All restrictions on mercury imposed by C.O. M-78 have been removed. Action taken because of improved supply-demand position in respect to mercury.

**Neoprene Control Tightened—WPB**—Increased demand for use of neoprene in many essential war products has made it necessary for ORD to apply more stringent restrictions to use of neoprene.

**Chrome Steel—Stainless Steels—WPB**—Restrictions on utilization of steel mill production facilities for fabrication of corrosion- and heat-resistant chrome steel and on use of ferro-alloys, have been removed. WPB "unfroze" stainless steels held by producers and consumers.

**Surplus Steel Valves—WPB**—Catalog of 30,690 new surplus steel valves of various sizes and types has been published for use of war contractors and others.

**Surplus Property—Maritime Commission**—Unified procedure for disposal of surplus property, giving first preference in obtaining material to contractors in shipbuilding industry, then to other government departments, war contractors, in-

(Continued on page 214)



THE SUN  
NEVER SETS  
ON THE  
MIGHTY JEEP

NOR ON  
N-A-X  
HIGH  
TENSILE

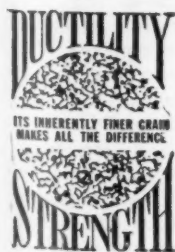
# Hell Bent for Victory

## WITH N-A-X HIGH TENSILE

Slugging it out in the devilish nightmare of modern war . . . pounding ahead through blistering heat and paralyzing cold . . . the Willys Reconnaissance Car—the Jeep and N-A-X HIGH TENSILE Steel is a fighting team of solid American might.

Superior implements of war like the amazing Jeep are crushing Axis resistance on all fronts . . . and in practically every type of battle equipment

used by the Allies, you will find steel by Great Lakes. Such service-testing by any machine or metal should be conclusive evidence of its ability to meet all civilian needs. It certainly demonstrates the rugged strength and resistance to fatigue and impact of N-A-X HIGH TENSILE. Write for our new booklet describing N-A-X HIGH TENSILE and N-A-X 9100 SERIES of alloy steels. It gives you complete details.



**GREAT LAKES STEEL CORPORATION**

DETROIT, MICHIGAN . . . Sales Offices in Principal Cities

Division of  
**NATIONAL STEEL CORPORATION**

Executive Offices

Pittsburgh, Pa.





## Consider the Lowly Chip..

How Does a Cutting Fluid Function?

What Characteristics of Metals Govern Machinability?



What Is the Mechanism of Metal Cutting?

## What Knowledge Its Gnarled Features Hide!

We're moved to poetic expression when we contemplate the great advances in metal-working which become possible as more and more is learned about the formation of a metal chip. Too long the chip has been taken for granted as just something which happens when you cut metal. Scientific investigation is bringing to light data which may greatly alter present day conceptions of tool angles, depth of cut, tool speeds, cutting fluids and other factors which are a part of metal cutting.

Through study of the metal chip come further answers to three fundamental questions: "What is the mechanism of metal cutting?" "What characteristics of metals govern machinability?" and "How does a cutting fluid function?"

We at D. A. Stuart Oil Co. are probing these mysteries with all the tools and techniques science makes available. We don't know all the answers yet, but we're learning them fast. As our research engineers inch closer and closer to the truth about the metal chip, their findings are reflected in improved cutting fluids—to do a better job for you.

We invite you to write for our new free booklet, "The 577th Oil," which contains twenty-two case histories, typical examples of how Stuart Oil Engineering is solving production problems (like your own), as well as other valuable metal-working data. Please state your name, company and title.

### A REQUEST OF STUART CUSTOMERS

Containers of all types are critically scarce. We urge you to cooperate with the W. P. B. program to conserve containers by observing these four rules for handling drums:

1. Do not drop.
2. Use a little oil to avoid stripping threads in removing plugs.
3. Replace plugs carefully when drum is empty.
4. Keep drums under cover when emptied.

*Thred Kut* • CODOL • SUPER KOOL • DA

**D. A. STUART OIL CO.**  
LIMITED

2757 SOUTH TROY STREET  
CHICAGO 23, ILLINOIS

ESTABLISHED 1865

Warehouses in Principal Metal-Working Centers

• *STURAGO* • SOLVOL • KLEEN KUT

Stuart Oil  
Engineering  
Cares with every Barrel

(Continued from page 212)

dustries reconvert to civilian production, and last to competitive bidders, has been established by Maritime Commission.

**Steel Bars Rule Modified—WPB**—WPB has announced several changes in specifications controlling hot-rolled carbon steel bars. These changes were made effective by amending schedule 15 of L.O. L-211 and Interpretation 1 of L.O. L-211.

**Stainless Steel Rejections—WPB**—Rules governing replacement of stainless steel rejected by customer for non-conformity with specifications or for other defects have been made identical with those rules governing replacement of other types of steel, WPB announces. (Dir. 16 to CMP Reg. 1, as amended.)

**Waste Paper Agreement—WPB**—Eastern and western members of wastepaper consuming industry have renewed their agreement to purchase at OPA ceiling prices all properly processed paper offered to them, according to WPB Salvage Division.

**Hardwood Lumber**—To compensate mills for non-absorbable increase in production costs, including higher wage rates, OPA announces a flat 6 per cent increase in ceiling prices for all graded hardwood lumber produced in the Northeastern United States and part of Eastern Canada. The increase is applicable to all hardwood dimension and timbers. It does not apply to the charges which may be made for kilndrying, millworking, or anti-stain treatment, nor to specified differentials or additions to basic mill prices, such as additions for specified widths or lengths.

**Magnesium Products—WPB** announces the delegation of authority to the Aircraft scheduling Unit of the Aircraft Resources Control Board to grant specific authorizations to deliver magnesium products going into aircraft and aircraft equipment. Directive No. 34.

### M-1 NOW MARITIME COMMISSION ALLOTMENT NUMBER

The Maritime Commission will, in the future, use the single allotment number M-1 to identify all ship construction programs, the War Production Board announces.

As a consequence, the commission will discontinue using major program numbers M-2, M-3, M-4, M-5, M-6, and M-7. However, this action does not affect the use of the major program numbers M-8, M-9, or M-0, which identify programs of ship repair, other equipment and supplies, and construction and facilities.

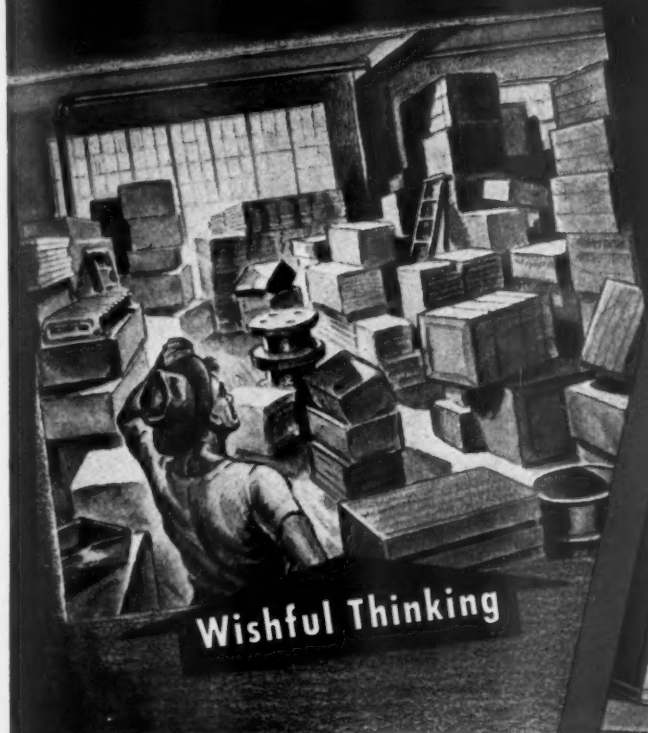
Major program numbers are used, under the Controlled Materials Plan, to identify allotments of controlled materials and authorized production schedules. The action was taken to reduce paper work.

In the future, manufacturers who have received allotments identified by any num-

(Continued on page 218)



# CLARK FORK TRUCKS



*... change*  
**WASTEFUL CONFUSION  
 TO  
 ORDERLY EFFICIENCY**



This is a vital "must" in carefully planned post-war production—the fast, orderly movement of materials that can come only through intelligent planning. Clark Fork Trucks are translating just such sound planning into profitable action—saving time, floor space and money.

Clark engineers can help you—  
 always ready. Write us.

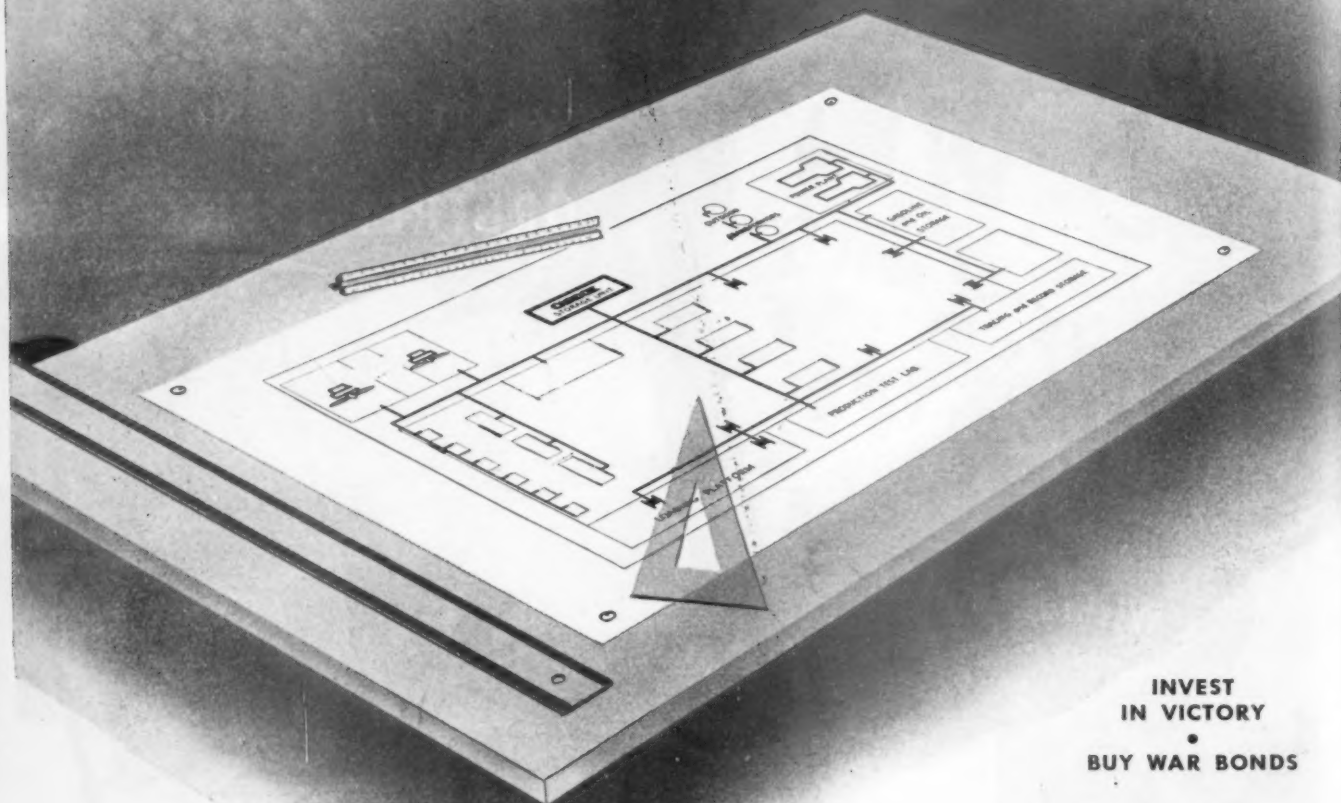
**A Product of CLARK EQUIPMENT COMPANY**

## CLARK TRUCTRACTOR

DIVISION OF CLARK EQUIPMENT COMPANY  
 BATTLE CREEK, MICHIGAN, U.S.A.



# The Best Laid Plans



INVEST  
IN VICTORY  
•  
BUY WAR BONDS

## Include FIRE PROTECTION by CARDOX

War has taught many lessons. One, for example, that merits high rating on any planning program is this: **ENGINEERED VICTORY** over production can be lost without an engineering victory over fire!

Whether your planning is concerned with war production, conversion, or utilization of new processes, an individually engineered Cardox Fire Extinguishing System offers many distinct advantages for protecting critical fire hazards.

### CARDOX PROTECTION COVERS A WIDE VARIETY OF INDOOR AND OUTDOOR HAZARDS

Installed to protect one or many manufacturing operations, a Cardox System can provide means of detecting fires in such places as areas where flammable liquids are processed, used or handled . . . around electrical equipment or at any of a wide variety of key hazards where one fire could stop all production.

### HOW CARDOX SYSTEMS PERFORM

Fire in any of these hazards is detected visually or automatically.

An alarm sounds, giving personal notice to leave the fire zone. Time is allowed for complete evacuation of personnel.

A timed mass discharge of non-damaging, non-contaminating cold Cardox  $\text{CO}_2$ , released into the fire zone, reduces oxygen content of the atmosphere below combustion requirements and cools out the entire fire. Cardox  $\text{CO}_2$ —in pounds or tons, as required—is discharged into the fire so rapidly that

burning time is usually cut to a very few seconds.

*Extinguishment of this kind is possible with a Cardox System through engineered application of carbon dioxide maintained at a standard storage temperature of 0° F. The advantage of uniform extinguishing performance can thus be provided indoors or out . . . for large or small fires . . . for one or a number of hazards.*

If you would like more information for use in solving current war plant fire protection problems—or for consideration in connection with post-war planning—write for Bulletin 2534.

**CARDOX CORPORATION • Bell Building • Chicago 1, Illinois**  
New York • Washington • Detroit • Cleveland • Atlanta • Pittsburgh  
San Francisco • Los Angeles • Seattle



# THE Preferred FLANGED JOINT FOR WELDED PIPING SYSTEMS

## MIDWEST LAP-JOINT STUB ENDS

For making connections to boilers, pumps, valves and other flanged outlets (and where piping must be frequently cleaned or inspected for corrosion), Midwest Lap-Joint Stub Ends have a tremendous advantage over flanges that are welded to the pipe (see drawings at right above). The swivel flange on the Stub End makes it unnecessary to accurately line up the bolt holes before welding; "setting up" is simple and quick because no special clamps or jigs are required to hold the face of the flange absolutely perpendicular to the axis of the pipe. The result is a real saving in time and cost of welding.

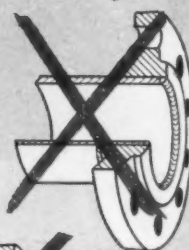
Another important economy is in erection. Field organizations report a saving of 25% in erection time for making up a joint using Midwest Lap-Joint Stub Ends in comparison with flanges rigidly fixed to the pipe; this saving is even greater when the flanges are on bends.

See Bulletin WF-41 for complete data regarding Midwest Lap-Joint Stub Ends . . . and the many other Midwest Welding Fittings that simplify and save on welded piping.

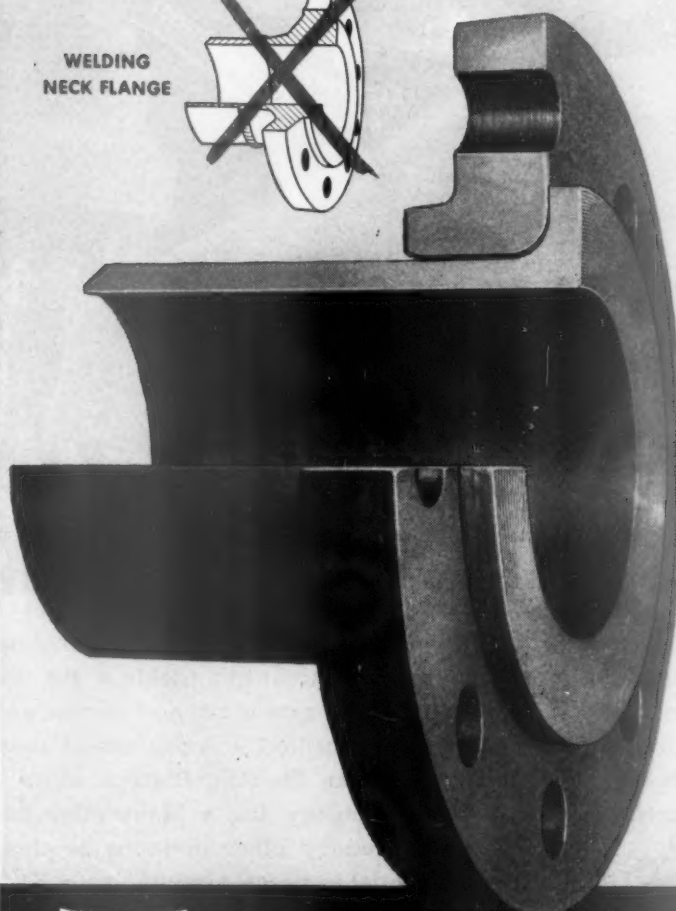
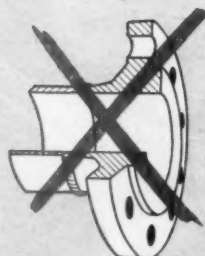
SCREWED AND  
WELDED FLANGE



SLIP-ON FLANGE  
WELDED FRONT  
AND BACK



WELDING  
NECK FLANGE



### MIDWEST PIPING & SUPPLY CO., Inc.

Main Office: 1450 South Second St., St. Louis 4, Mo.

Plants: St. Louis, Passaic (N. J.) and Los Angeles

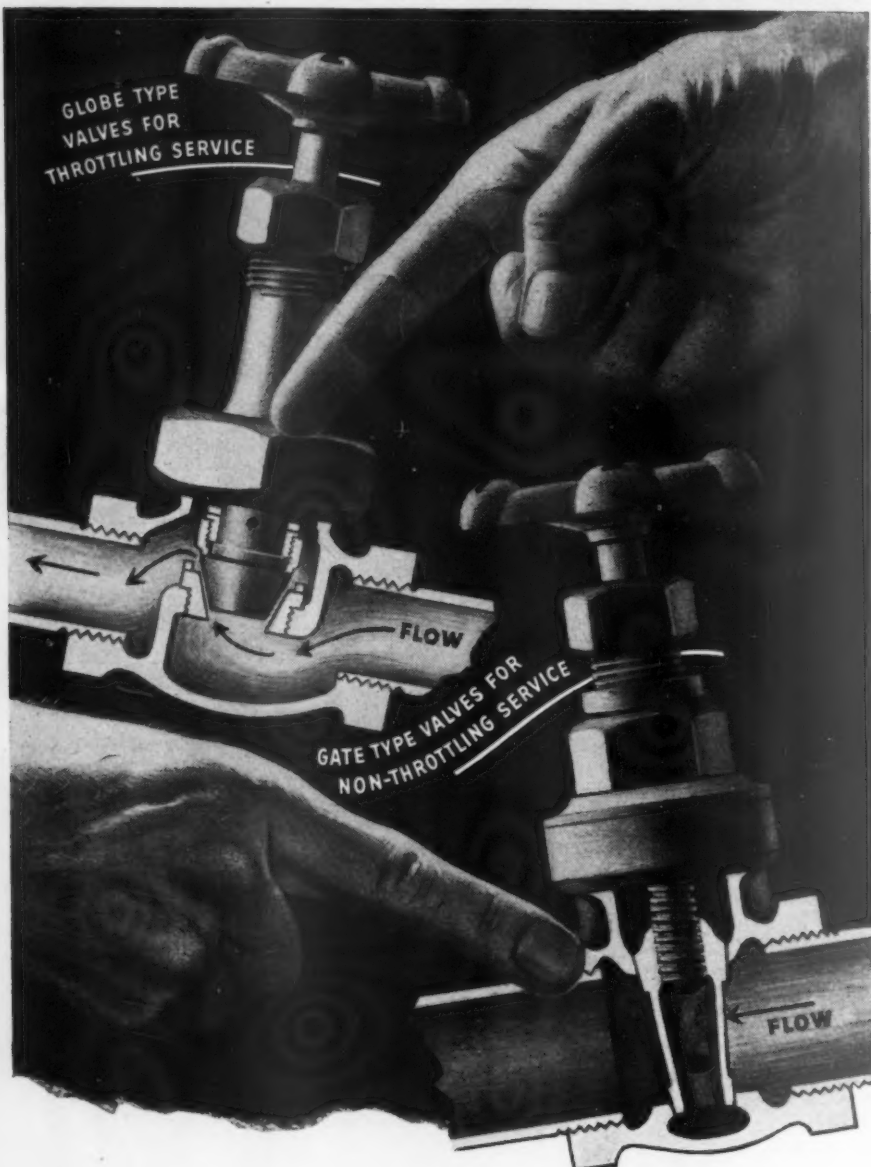
Sales Offices: Chicago—645 Marquette Bldg. • Houston—229 Shell Bldg. • Los Angeles—520 Anderson St. • New York—(Eastern Division) 30 Church St. • Tulsa—533 Mayo Building.

### MIDWEST WELDING FITTINGS IMPROVE DESIGN AND REDUCE PIPING COSTS





## READING-PRATT & CADY ANSWERS A QUESTION:



### —WHEN TO USE A GATE OR A GLOBE VALVE

A gate valve gives either a wide open flow or a complete shut-off. A globe throttles the flow from a torrent to a trickle. • It's easy to tell the two valves apart. The body of a gate is tall and narrow while the body of a globe is rounded and pot-bellied. • A full line of these and other valves is manufactured by the Reading-Pratt & Cady Division of American Chain & Cable Company, Inc. • Many other basic products are manufactured by other divisions of this company—products essential in peace, vital in war. • Keep asking for Reading-Pratt & Cady Valves.



*In Business for Your Safety*

## AMERICAN CHAIN & CABLE COMPANY, INC.

BRIDGEPORT, CONNECTICUT • In Canada—Dominion Chain Company, Ltd.  
In England—The Parsons Chain Company, Ltd., and British Wire Products, Ltd. • Aircraft Controls, American Chain, American Cable Wire Rope, Campbell Cutting Machines, Ford Chain Blocks, Hazard Wire Rope, Manley Garage Equipment, Maryland Bolts and Nuts, Owen Springs, Page Fence and Wire, Reading Castings, Reading-Pratt & Cady Valves, Wright Hoists and Cranes.

(Continued from page 214)

ber from M-2 through M-7, may use the allotment number M-1 in placing orders for production materials or in making allotments for these programs.

### PROCEDURE FOR RELEASE OF NON-COMBAT VEHICLES

Procedures under which a number of commercial type vehicles will be released by the Army have been announced by the War Department.

Involved in the release are more than 10,000 commercial vehicles of 1939 and earlier models, mostly trucks. In addition to the trucks, there are 989 new 1942 model passenger cars and about 50 new motorcycles.

Included among the used commercial vehicles are approximately 100 having the general appearance of tactical vehicles such as jeeps. Actually they are not tactical vehicles, but early adaptations of standard commercial models for use as weapon carriers, reconnaissance cars, and the like. They are being relegated to general utility use upon being superseded by vehicles of modern tactical design.

These and the other trucks, of all types and sizes, are being retired from service because of increasing maintenance difficulties. Since May, 1943, the Army gradually has been retiring such equipment of model 1939 or earlier, but because of the urgent need of trucks for civilian use, it was decided at this time to accelerate the program.

Most of the vehicles will be in operating condition, but some classified as "unserviceable for Army use," are in need of servicing ranging from minor repairs to complete overhaul.

Standard procedure is being followed in disposing of these vehicles, the War Department selling nothing serviceable directly into civilian channels. Serviceable vehicles will be turned over to the Procurement Division, Treasury Department. Those needed by other Federal agencies will be withdrawn and the remainder sold.

Procurement Division will coordinate disposal of the trucks with the Office of Defense Transportation, which will make available at its regional and district offices full information as to proper certification, present location, price, terms of sale, etc. Similar information may be obtained from the 11 regional offices of the Treasury Procurement Division, which will conduct the public sales. These offices are in Boston, Mass.; New York, N. Y.; Washington, D. C.; Atlanta, Ga.; Cincinnati, Ohio; Chicago, Ill.; Kansas City, Mo.; Fort Worth, Texas; Denver, Colo.; Seattle, Wash. and San Francisco, Calif.

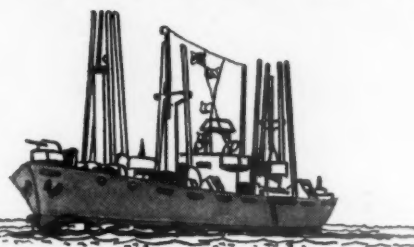
Trucks classified as "unserviceable for Army use" will be sold by local salvage officers of the Army Service Forces by competitive bidding or written invitation. Bidders will be required to conform to maximum prices for used trucks as established in OPA Revised Maximum Price Regulation No. 341. All such sales are coordinated with the Office of Defense Transportation, which will have available full information.

Photograph—Operator checks position of strip as it enters forming rolls. In a matter of seconds, it will emerge at the other end as a welded piece of uniform Talon's Tubing.

## Uniformity of TALON'S Electric Welded Tubing Assured By Careful Selection of Strip Steel

● In the manufacture of Talon's Electric Welded Steel Tubing, coiled, flat stock feeds continuously through forming rolls which shape the strip into a round. Then the butted edges pass under the electric resistance welding unit to form a continuous tube wall.

Careful selection of strip assures correct wall thickness, concentricity, and accurate size in the finished tubing. Talon checks each coil for accuracy of gauge and width and condition of surface. The analysis, hardness, and microstructure of the steel are also checked at regular intervals. That is why Talon's Tubing will meet the requirements of your particular application. Your inquiries will receive immediate and careful attention.

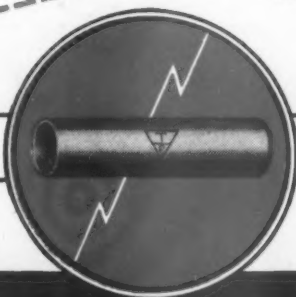


*Talon's Tubing is equal to the tough jobs for which it is used. It is dependable in our ocean-going vessels where long tie-ups for tube replacements must be avoided as much as possible. And remember, Talon's rigid inspection assures this long tube life and less maintenance.*

### INTERESTING FACTS ABOUT THE FABRICATING ADVANTAGES OF TALON'S STEEL TUBING

Change of Section . . . Talon's Tubing can be headed, expanded, swaged, spun, flanged, upset, grooved, rolled, fluted, flattened, tapered, and otherwise changed in cross-section to meet an endless variety of design requirements.

**PRESSURE**



**MECHANICAL**

# TALON . . . INC.

**STEEL TUBE DIVISION**

**OIL CITY, PENNA.**





# Business MACHINES and Stationery STORES

## Electric Typewriters

## INCREASE PRODUCTION 30%

Purchasing Department of Lyon Metal Products Uses Electric Machines for General Office Work As Well as for Purchase Orders and Billing

By GEO. E. HENRY

**E**LECTROSTENOTYPIST. There is no such word in today's Webster's Unabridged dictionary though it is reputed to contain some 700,000 words with their progenitors, cognates, agnates and offspring. Yet, it is a meaningful combination and it or some abbreviated form thereof may be the popular designation for private secretaries who finger the plastics of future modern typewriters.

This eighteen-letter appellant is born of the electric typewriting machine and its operator whether she be blonde, brunette or purple tinged. Now the electric typewriter is not by any means a new business machine. For years it has served extensively and well as a billing machine, and for writing purchase orders and kindred documents where multiple copies that would be in good standing with the recipient are in demand.

But obviously it has a place in general letter routine along with Dear Sir, Dear Madam, Dear Ed, and Sincerely Yours. What the potentialities are after this period ubiquitously termed the "duration" few office managers or their executive bosses are loath to worry about or place bets on. They are well satisfied with the performance of what are known as standard machines, and the easy, quiet operation

of the modern noiseless machines. To many the electric typewriter for general office work is as remote as steamboats plowing through the brine at 50 knots per hour were to the denizens of Fulton's day, or as modern transport planes were to the "experts" who were unable to grasp the importance of the science and technique that the Wright Brothers were experimenting with at Kittyhawk to overcome the natural law revealed by Newton.

However, when the current vintage of stenographers and typists say "I love it" with eyes sparkling like Venus flirting with a new moon, after the daily eight hours of con-

tinuous copying of requisitions and making bill tabulations on the electrically actuated typewriter, you can bet your social security deduction that the electrically equipped stenographic room is not a nebulous thing of the distant future. Of course this is only a part of the story. Contented stenographers, not unlike other contented creatures, are better producers, and this last qualification will have much to do with the electrifying of office typewriters, as will the other factor. Nor is it to be imagined that the manufacturers of our typewriting equipment will overlook these potent sales-making factors when the time is opportune.

(Continued on page 222)

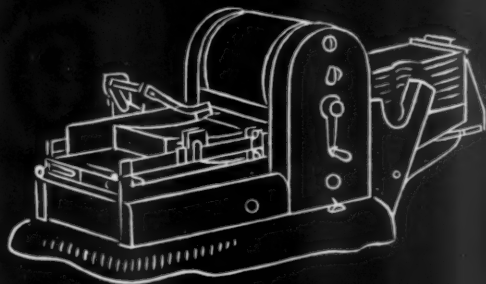


Making Electricity do the Work at Lyon Metal Products



**Easier,  
Quicker,  
Surer**

**The new Mimeograph  
one-writing system  
of order control**



For purchasing  
department

For receiving  
department

For inspection  
department

**All copies are identical**

Now, purchasing, receiving, inspection and material control can be completely correlated, with sure and accurate control all along the line.

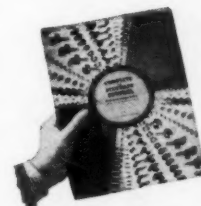
A single writing with Mimeograph duplication is the key to this new system.

A single writing on a Mimeograph form-topped stencil sheet produces on the Mimeograph duplicator a combination purchase order with re-

ceiving and inspection forms. Each is produced in sufficient quantity to go to everyone concerned, so that everyone in every department who needs to know, does know these things: what has been ordered, what has been received, what has passed inspection, what is in stock.

Inside manufacturing delays caused by lack of information, or wrong information, are eliminated. There is complete and accurate con-

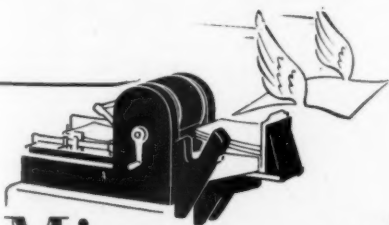
trol from start of the order until stock reaches the bins.



**GET FREE FOLDER  
FOR FULL DETAILS**

As a practical means of stepping up production in your plant, get full information on this efficient new system.

It's yours in the free folder, "Complete and Accurate Control over Purchased Parts and Raw Materials." Mail coupon below to A. B. DICK COMPANY, Chicago.



MIMEOGRAPH is the trade-mark of  
A. B. Dick Company, Chicago,  
registered in the U. S. Patent Office.

**Mimeograph duplicator**

A. B. Dick Company, Dept. P-344  
720 W. Jackson Blvd., Chicago 6.  
Send me a free copy of the folder, "Complete and Accurate Control over Purchased Parts and Raw Materials."

NAME.....  
COMPANY.....  
CITY.....STATE.....





BECAUSE chlorine (bleaching agent) is vital to war, papers made from anything but 100% rags are losing color and brightness.

*Anniversaries Bond* — made only from plentiful, new all-rag cuttings — continues bright, clear, crisp and permanent... as ever, the most distinguished sheet known to the paper making art. Long, strong cotton fibres weld themselves into a sheet of strength and character, with outstanding opaqueness in any weight.

*Expensive?*... hardly! You spend dollars of time on *what* you write — you need spend only  $\frac{1}{8}$ ¢ more to *make* it right.

FOX RIVER PAPER CORPORATION  
403 South Appleton Street, Appleton, Wis.

SPEND  MORE

*Masterline*

SPECIFY **ANNIVERSARY BOND**

THE BEST LETTERHEAD PAPER IS MADE FROM <sup>V</sup>RAGS *all*



#### FREE Comparison Kit

Visual proof, with samples, that *all-rag Anniversaries Bond* is the paper for you to sign—printed, lithographed or engraved. Please request on business letterhead.



# TAB

## Every Key Reference

in books, card files, portfolios, sales presentations, etc. with  
Genuine—Original

### MAK-UR-OWN

TRADE MARK REG. U. S. A.

### CELLULOID INDEX TABS



Any index needed is made and attached in a moment when you use clean, convenient MAK-UR-OWN Tabs.

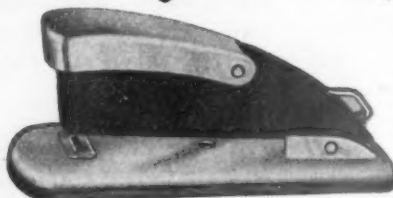


See your Stationer—Equip every desk with MAK-UR-OWN

THE VICTOR SAFE & EQUIPMENT CO., INC.  
NORTH TONAWANDA, N. Y.

## STAR Stapler

THE  
BEST WAY  
TO FASTEN  
PAPERS



Star Staplers are needed on every desk. They use less steel to fasten papers than other methods of fastening. They are built to last and are guaranteed against defects. Essential industries can still be supplied. Model S 122 A shown above lists for only \$1.90

Write for  
Catalog.

**STAR** ★ **PAPER FASTENER CO.**  
DEPT P., NORWALK, CONN.  
*A complete line of Tackers and Staplers*

(Continued from page 222)

for a dose of aspirin or acetanilide at the corner drug store. There was less demand for special chairs to obviate imaginary backaches and less absenteeism. And in addition, there was an increased production of 25 to 30 percent more and better work.

He was sold. Today there are four electrically energized machines in his department, one of which is a billing machine. He states that the experience related by those he called upon has been duplicated in his own office and says that both the machines and the girls are doing a good job. The matter of multiple, clear carbon copies is no longer a problem, and the last of fourteen copies is as legible as the lettering on a quarter fresh from the mint. A simple adjustment on the machines regulate impact of type according to number of copies being made. There is no guess work and re-checking to determine whether an 8 might be a 3 or a 5 or a 6, or vice versa, or whether an e is an o or a c. Every copy, whether it is for the purchasing department, accounting department, receiving room, or some other department, or for some official requirement, is distinctly legible.

The billing machine is equipped with Gothic type, the other three having standard typewriter type in pica size. The latter are used for general correspondence work as well as for typing purchase orders and other tabulated work. The operators? "It's so simple and easy," they declare; "I love it."

Because of the lightness of touch required for the electric machines the operators say that they find it rather difficult to adapt themselves to standard machine operation, though they claim it is a very easy matter for operators of the latter to readily become acquainted with the electric machines. Anyhow, who doesn't prefer the easier way of doing things.

#### BRASS NOT AVAILABLE FOR PENS AND PENCILS

Members of the Fountain Pen and Mechanical Pencil Industry Advisory Committee have been told by War Production Board officials that brass cannot be made available for production of the pre-war type of fountain pens and mechanical pencils in the near future, WPB announces.

Reversion from steel to brass for the working parts of fountain pens and mechanical pencils is impossible while the supply of brass remains as small as it is

(Continued on page 226)

# THIS PRODUCTION GIANT

## HAS A "Nerve System" OF PAPER



### This "Nerve System" may fail... unless industry saves paper this special way

America's industrial machine is like a huge robot. Powerful in full stride . . . but virtually helpless without *direction* and *control*. It cannot function without a "nerve system" of paper . . . all those control systems and accounting records that *start, stop* and *direct* every operation of industry.

Today, a serious paper shortage threatens this "nerve system." And saving paper by the pound, as waste baskets are emptied, is not enough. This goes mainly into heavy papers and containers, not fine papers used for records. You must save *new* paper by the mile . . . examining your control systems to eliminate waste and duplication. Here are a few examples of this special way to save paper:

**15 TONS PAPER SAVED** on 32 control systems through changes in form designs, sizes, after analysis by Standard.

**6.6 MILES PAPER SAVED** on annual usage of 50,000 forms when Standard combined two forms for one-time writing.

**20,000 SHEETS PAPER SAVED** when analysis of three related records showed that one could be eliminated.

There are opportunities like this in *every* business. Possibly control systems and accounting records in *your* plant are consuming far more paper than necessary . . . and using up precious time, energy, manpower and equipment.

**Standard Specialists at Your Service . . .** to study accounting and control systems in your plant, suggest ideas for simplifying paperwork and saving paper. No charge. No obligation. Just part of our War Service to American Industry.

THE STANDARD REGISTER COMPANY  
206 Albany St., Dayton 1, Ohio

Send your **FREE CHART** showing the "nerve system" of industry and how to "save paper by the mile" . . . in 61 places.

NAME \_\_\_\_\_ TITLE \_\_\_\_\_

FIRM \_\_\_\_\_

ADDRESS \_\_\_\_\_



## AMBASSADORS TO AMERICAN BUSINESS

When your business message must carry more than ordinary prestige—in fact, represent your company as an “ambassador”—consult R. O. H. Hill, Inc. Within this organization are both artists and craftsmen thoroughly familiar with your requirements and modern, versatile, manufacturing equipment to assure quality production. Letterheads, business cards, announcements and certificates of every kind are the ambassadors to American business in which R. O. H. Hill, Inc. specializes.

### Special Announcements and Certificates

Notices to stockholders, changes in executive personnel, presentation of new products and services, as well as certificates of all kinds, including diplomas and citations... these “Ambassadors to American Business” require special talents and craftsmanship. Let us know your special needs and we will be pleased to submit suggestions and samples of our work at the earliest possible date.

### Letterheads

To reflect the personality of your company, to dignify your products and to gain attention and prestige for your name in a fashion distinctly yours. We have created and manufactured letterheads for some of America's largest corporations and will be pleased to send samples of our work on request.

### Family Resemblance Stationery

To give continuity of thought and instant recognition to your two principal “silent salesmen”—the letterhead and the business card. The cost is trifling when compared with the business getting, prestige building results obtained. This “family resemblance” idea is now used extensively by many business concerns. May we show you what has been done for others—and how the idea applies to your business.

### Business Cards

To introduce your salesmen effectively, to implant the prestige of your company and to create an impression that will remain long after the interview. As the largest manufacturer of business cards in America, we are in a position to offer efficient, speedy service not to be duplicated elsewhere.

### Army-Navy “E” Award Stationery

A demonstration of R. O. H. Hill leadership in special announcements is the general acceptance of this company as the outstanding producer of stationery for the “E” Award Ceremony. A list of firms already served includes many of the big names in American industry. When this “once in a lifetime” honor comes to you, remember that R. O. H. Hill is the specialist you need. Invitations, announcements, certificates of award to individual employees—composed, engraved and delivered in the right way, at the right time. Brief suggestions that will save executive time in preparation for your Army-Navy “E” Ceremony are contained in the booklet “Your Army-Navy E Award”—available on request.

## R.O.H. HILL, INC.

270 Lafayette Street, New York 12, N. Y. • Tel: CAnal 6-6340

*Designers and Manufacturers of Important Business Ambassadors  
Special Announcements—Letterheads—Business Cards—Certificates*

(Continued from page 224)

at present, a representative of the Copper Division of WPB said. He branded as erroneous the widely repeated report that, as a result of reductions in the small arms program, copper and brass have become plentiful enough to make possible large-scale relaxation of the controls over these metals. Strip production in the brass mills has fallen off considerably, he said, and the supply of brass rod and tubing as well as small diameter copper wire is scarce.

The supply of copper is now in balance with demand, the committee members were told, but the balance is so close that so far it has been possible to permit slightly increased use of copper only for a few essential items that are directly or indirectly connected with the war effort.

1 1 1

### MADE MEMBER OF I. B. M. QUARTER CENTURY CLUB

Clement Ehret, director of market research of International Business Machines Corporation, New York, N. Y., was the guest of honor at a luncheon held recently by his associates to signalize his completion of twenty-five years of continuous service with IBM and his admission to



Clement Ehret

its Quarter Century Club of veteran employees.

Mr. Ehret joined the company in 1919 as assistant to the general manager of the electric accounting machine division, after having been connected briefly with it in 1916 as a sales representative. During the ensuing years he held a wide variety of sales and research executive positions, but for the past ten years as director of market research he has organized and directed activities of the company in connection with developments affecting products of all its divisions.

1 1 1

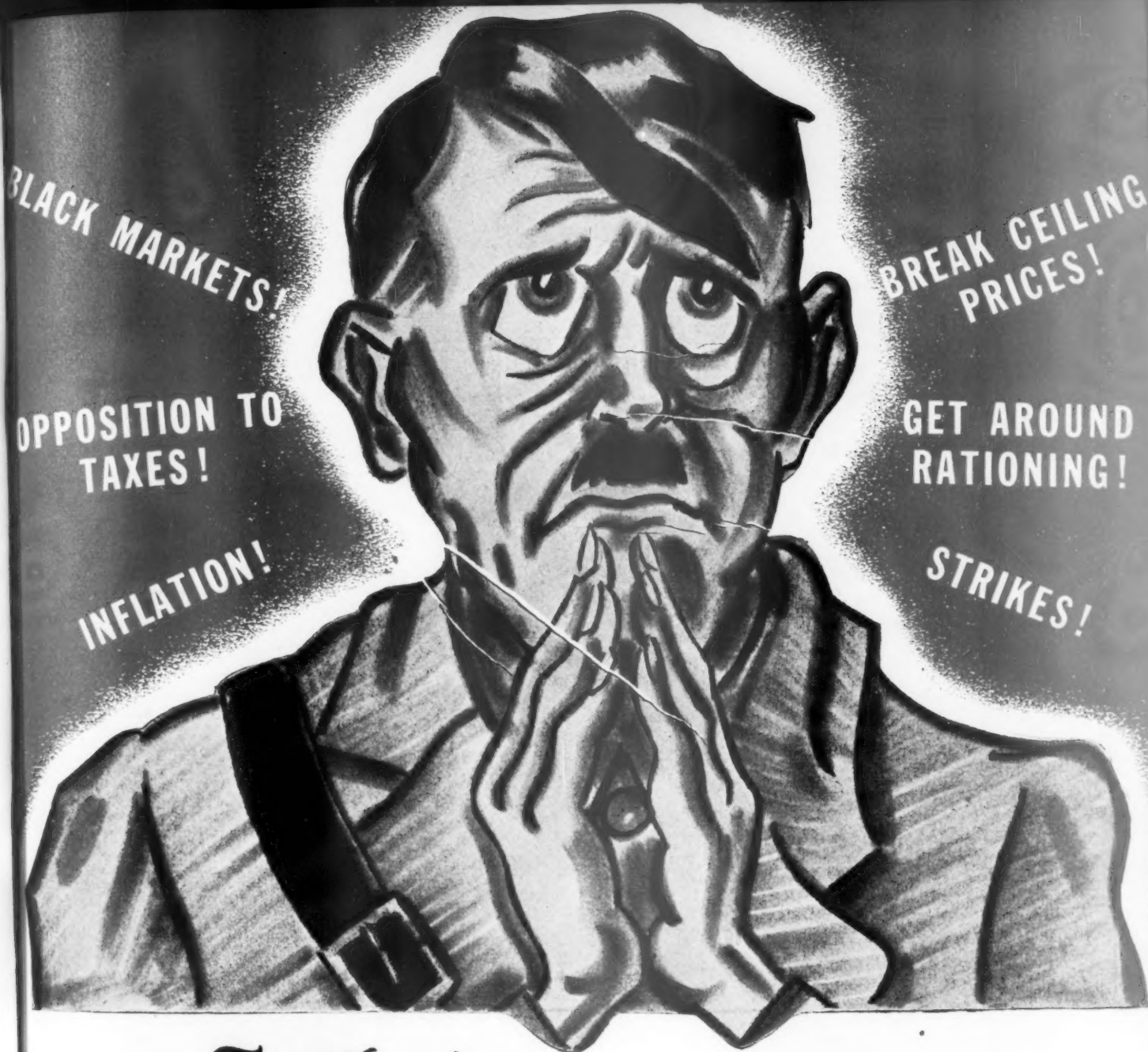
### WAX PAPER RAW MATERIAL COSTS— AMENDMENT 2, MPR 307

Raw material costs which manufacturers may use in calculating ceilings for miscellaneous waxed papers under the Office of Price Administration's pricing formula must be no higher than the maximum prices for the raw materials in effect on December 31, 1943, OPA announces.

Most manufacturers of these products determine their ceilings either by specific

(Continued on Page 228)



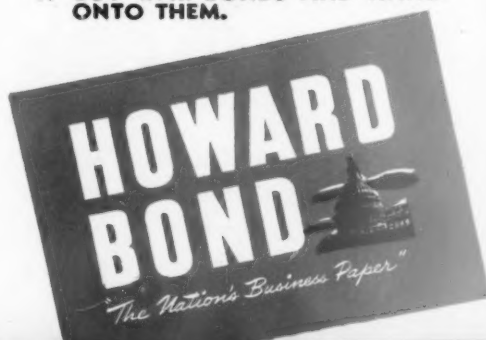


## Hitler's NEW TECHNIQUE

Hitler knows what inflation did to Germany following the last war. And you can bet your bottom dollar that his agents in this country are fostering black markets, stirring up opposition to taxes, fomenting strikes for higher wages, searching for loopholes in the rationing set-up and otherwise contributing all they can to bringing on an uncontrolled price rise here, hoping that it will make this war last longer and leave us all broke when it's over. ● Uncle Sam is fighting hard to keep prices down. But he can't do it alone. It's up to you to battle against any and every rising price! To help win the war and keep ours from being a hollow victory . . . you must keep prices down. The column to the right will show you how.

**THE HOWARD WRITING PAPER MILLS • URBANA • OHIO**

1. BUY ONLY WHAT YOU NEED.
2. PAY NO MORE THAN CEILING PRICES.
3. SUPPORT HIGHER TAXES.
4. PAY OFF OLD DEBTS.
5. DON'T ASK MORE MONEY FOR GOODS YOU SELL OR WORK YOU DO.
6. SAVE FOR THE FUTURE.
7. BUY WAR BONDS AND HANG ONTO THEM.





That white scale on the edge of Webster's Micrometric Carbon Paper is a potent aid in your struggle against today's twin shortages of typewriters and typists. It saves the time and improves the efficiency of your present secretarial staff—by indicating at a glance the proper spacing of every letter or report and by eliminating time-wasting guesswork. The carbon paper is removed instantly, without smudged fingers, by a pull on the white edge.

By cutting seconds from the typing time of every letter or report,

many precious hours of secretarial time are saved.

Webster also makes the famed MultiKopy Carbon Paper, noted for its sharp, clear impressions and durability . . . Star Brand Typewriter Ribbons, which give neat and clean results throughout a long life . . . carbon papers for gelatin hektograph and spirit process duplicating machines . . . carbon-paper ribbons for photo offset work . . . ribbons and carbons for all Elliott-Fisher, Addressing, Adding and International Business Machines.

Winning the War Requires Carbon Paper and Typewriter Ribbons

For Service and Samples Write:

**WEBSTER'S**

7 Amherst Street, Cambridge 42, Mass.

**CARBON PAPERS and TYPEWRITER RIBBONS**

Factory branches in

New York

Philadelphia

Chicago

Pittsburgh

San Francisco

(Continued from page 226)

dollar-and-cent maximum prices established by OPA for the standard lines, or by use of their price lists in effect in October 1941. Those who are unable to use either of these two methods are provided with a formula under which they determine their ceilings by computing raw material costs, applicable conversion charges, margin, and delivery charges.

This action will prevent manufacturers using the formula method from passing on to their buyers any increases in raw material costs that occur after December 31, 1943. It also serves to put these manufacturers on the same basis as those using dollar-and-cent or price list ceilings in so far as the raw material cost factor is concerned.

Leading waxed paper items whose ceilings are established generally by formula are waxed kraft, waxed glassine, delicatessen papers, interfolded, florist tissue, waxed greaseproof, twisting tissue, can liners, oiled and petrolatum treated papers, as well as household and cutterbox rolls.

(Amendment No. 2 to Maximum Price Regulation No. 307 (Waxed Papers).)

#### **PREDICT PLASTIC-PAPER PRINTING PLATES WILL REVOLUTIONIZE OFFSET PROCESS**

Out of experiments which began nine years before the war has come an invention which today is serving many governmental agencies and may tomorrow revolutionize the mechanics of offset printing throughout the world. This invention is a flexible printing plate made of paper and Plaskon Resin Glue.

Paper sheets are permanently bonded together with waterproof Plaskon urea-



Plastic Plates in Offset Printing

formaldehyde resin and their outside surfaces are coated with this same material. The printing side is then coated with three layers of a special alcohol and clay emulsion and the plate is ready for the engraving process. Such plates can be manufactured with existing machinery in practically any paper mill.

Experts of the offset printing industry who have tested the new plastic plate state that it not only restores certain advantages lost when metal replaced stone as a printing base, but also adds many new advantages. With copper and other standard plate materials growing more scarce because of the war, the non-metal

(Continued on page 230)



"FOR PETE'S SAKE MISS ROSS

*Send for this FREE book"*



Here's Another  
GOOD IDEA!



*This girl, using poorly designed cut forms and carbon can type 10 invoices per hour.*



*This girl, using a Rediform-designed form, in Continuous Speedifold style, completes 16 invoices per hour. Ask the Rediform man to show you how SPEEDIFOLD can help you.*

**A real help to busy executives  
who must keep business  
forms inventories**

SAVE  
WASTE  
PAPER

Here's how you can save hours of precious war time and side-step those forms inventory headaches. Now, with the aid of this unique book, you can maintain an accurate and fool-proof perpetual inventory of your vital operating forms.

We designed this valuable 100 page Inventory Control Book to help save YOUR time, in the same manner that we have designed and produced thousands upon thousands of timesaving business forms and systems for America's great industries.

For instance, we can show you how to accelerate the forms production of your

clerical staff, how to produce MORE finished work with LESS help. We can speed up the writing of hand-written records as much as 172% and machine-written records as much as 95% by redesigning business forms and systems to eliminate all waste motions and operations. The "know-how" of our Systems Engineers and Form designers is yours without premium. It will pay you well to call in your local Rediform representative, the next time you have a Forms or Systems problem.

P. S. Would you like a free copy of "Forms Inventory Control"? If so, make your request on your business letterhead, addressed to Department 70.

**REDIFORM**  
TIMESAVING BUSINESS FORMS  
AND SYSTEMS

AMERICAN SALES BOOK COMPANY, INC. SUBSIDIARY OF MOORE CORPORATION, LTD. NIAGARA FALLS, N. Y.



*"The Injured Pup"*

*When you want to know*  
**GO TO AN EXPERT**

WHEN YOU COME to buying papers, the expert would, naturally, be your printer.

Ask him about Rising Papers. We're confident of his reply. Good printing depends very considerably on good paper... and for many years these same experts have depended on Rising quality for the finest results.



The price is the same as other quality papers. Among other lines: Rising Bond (25% rag), Rising Line Marque (25% rag), Finance Bond (50% rag), Rising Parchment (100% rag). The Rising Paper Company, Housatonic, Mass.

ASK YOUR PRINTER—HE KNOWS PAPER

(Continued from page 228)

plate is looked upon as a "life-saver" by the nation's 4,000 lithographers, who are hoping it will soon be released for their use.

Costing far less to begin with, the plastic plate will bring users savings in shipping costs, since each weighs but a fraction of a comparable copper plate. The non-metal plates will require less storage space after being used and, unlike metal plates, will not have to be protected against damage from air or water, since they are impervious to both.

The plastic plates are used in offset printing in the same manner as metal plates. Once it is sensitized with a solution of albumen bicromate of ammonia and the subject to be printed placed on it, the plate is inserted in a vacuum frame. On exposure to light from a carbon ray lamp, the image is transferred to the plate's alcohol resin surface. This exposed surface is then coated with developing ink, washed until the print becomes clear and etched with a chemical solution. When the plate is clamped to a cylinder of an offset press the image is first imprinted on a rotating rubber blanket and then transferred to paper.

Inventors of the new plastic-paper printing plate are William C. Toland and Ellis Bassist of the Plastolith Company, Boston, Mass.

1 1 1

**NEW PRINTER FOR SEMI-  
 PHOTOGRAPHIC REPRODUCTIONS**

Designed to take full advantage of the time-saving features inherent in semi-photographic reproduction processes, a new printer, especially adapted to this



**For Semi-photographic Reproduction**

type of work, has just been announced by the Charles Bruning Co., Inc.

Used with the new semi-photographic materials, this new printer, known as the Bruning 55C Continuous Photographic Printer, provides clear and faithful duplicates of anything typed, printed, photographed or drawn. The 55C is a 42-inch printer, yet, owing to the exceptional compactness of its design, requires floor space of only 40 x 62 inches. It may be

(Continued on page 232)

# BLACK MAGIC



"Practitioner of the Black Art" was often applied to the alchemist, medieval forerunner of modern research.

## jet-rite THE MODERN "BLACK ART" FOR SPIRIT DUPLICATING—the CLEAN way

MODERN MAGIC has produced a new "black art." Out of OLD TOWN'S laboratory research has come the startling **jet-rite** Process. Spirit duplicating in real, true BLACK—perfect black copies of anything you wish to reproduce.

There is nothing like black for legibility, fine appearance and versatility. It commands attention. It is official. Now, with **jet-rite** you can use black for all your forms, bulletins, sales letters, instruction sheets and the thousand and one duplicated articles that are BETTER WITH BLACK.

No new equipment is needed. **jet-rite** can be produced on any spirit duplicator without special attachments or without added time or trouble.

The OLD TOWN representative in your city is probably the leading stationer or office supply dealer. Ask him to demonstrate **jet-rite** or write us for samples and full information.

### Attention — Dealers:

Outstanding products with unusual sales appeal make the Old Town franchise the most valuable ribbon and carbon and duplicating supply agency in any city. . . . Write us.



## Old Town

RIBBON & CARBON CO. INC.

Foremost Makers of Ribbons and Carbons for Every Use

750 PACIFIC STREET, BROOKLYN 17 NEW YORK, N. Y.

GO · SAN FRANCISCO · LOS ANGELES · BOSTON · PHILADELPHIA · WASHINGTON · PITTSBURGH · KANSAS CITY · ST. PAUL  
EAPOLIS · ST. LOUIS · BUFFALO · DETROIT · NEW ORLEANS · BIRMINGHAM · MEMPHIS · ATLANTA · HOUSTON · DENVER

# About BULLETS AND PAPER

In the army bullets are bought to be used up — yet the army insists first on quality — not price. Cheap bullets that jam in the tommy-gun slow up the attack — smooth working ammunition speeds the battle. In business paper is also bought to be used — yet too often paper is bought on price — not quality. Cheap paper can “jam” the smoothness of your office routine — can slow the battle of production.

Get faster action in all your paper work with Parsons high grade papers, made with strong cotton fibers. For nearly a century these papers have been helping American business get its “paper work” done faster, and better.

Write today for Demonstration Folder of these superior business papers and see how they can be used in your business.

PARSONS PAPER COMPANY, HOLYOKE, MASS.

**Parsons Paper**  
*Specialized for Modern Business*

(Continued from page 230)

used either inside or outside of the dark room, and operates either with roll stock or cut sheets.

With a speed of 0 to 18 feet per minute, the Model 55C embodies improvements in light source and light control which assure maximum line opacity and clear, contrasting prints. Either of its two fluorescent lamps, one white and one amber, may be used in making exposures, depending upon the nature of the originals.

1 1 1

## KEEPING UP WITH THE ARMY

This photograph of the front and back of a registered envelope addressed to a soldier, gives some idea of the way some of our service men move around.

The envelope, containing a monthly check sent to all Eagle-A men in service, was mailed by the American Writing



Eight Months on the Road

Paper Corporation at Holyoke, Massachusetts on May 1, 1943. It first went to Macon, Georgia, but did not reach Sgt. Burns there. Subsequent postal marks show its course to Salt Lake City, Utah—El Paso, Texas—Denver, Colorado—San Francisco, California—and numerous army posts. For nearly eight months it traveled around the country and finally came back to Holyoke on December 9, 1943. An estimate of the total mileage of this piece of mail is well over the 10,000 mark.

The envelope came back little the worse for wear. It was still without a tear or break and evidently could have made another such trip without disintegrating. The envelope is made of Eagle-A Coupon Bond, a No. 1 grade all rag paper.

1 1 1

## E. M. HUGHES LEAVES STRATHMORE

On February 1st, Ebbert M. Hughes became Sales Manager of Fine Papers for the Los Angeles Division of Blake, Moffitt & Towne.

Hughes' whole business life has been in the paper field. On leaving Ohio Wesleyan University, he served two years with the 37th Division in World War I. On mustering out of the service, he returned to Ohio Wesleyan for a year and then joined Storrs & Bement, prominent paper merchants of Boston, where he was in the Announcement Department.

Two years later, he joined the Strath-

(Continued on page 234)






# THE MARK OF BETTER ENVELOPES FOR EVERY BUSINESS NEED . . .

The Tension imprint reproduced above is your assurance of fine craftsmanship in envelopes. This imprint signifies accomplishment gained through over half a century of manufacturing quality envelopes for every business need.

Envelopes are your ambassadors of good-will. They maintain vital daily contacts with your customers, suppliers, and within your own organization. The imprint

 reflects your good judgment in purchasing quality envelopes for mailing, packaging and filing.

NEW YORK 14, N. Y.  
345 Hudson St., Canal 6-1670

ST. LOUIS 3, MO.\*  
23rd & Locust, Central 2525

MINNEAPOLIS 15, MINN.\*  
500 South 5th St., Main 0547

DES MOINES 14, IOWA\*  
1912 Grand Ave., Phone 4-4126

KANSAS CITY 8, MO.\*  
19th & Campbell Sts., Harrison 0092

Originally Berkowitz Envelope Co.\*

**TENSION ENVELOPE CORP.**

## ACE THE STANDARD BY WHICH *all Staplers* ARE JUDGED

THE production of Ace Stapling Equipment has been devoted to the most essential war requirements for the past two years. Abnormally heavy Government requisitions, during this time, which had to be given preference, absorbed the great portion of our allotment. These conditions have proved a decided handicap in supplying stapling equipment to our regular commercial accounts. *This tension is gradually easing up!* We anticipate that there will be available, in the near future, more and more Ace Stapling Equipment.



ACE'S WARTIME MODEL  
No. 402-V

Ace Staplers have always commanded the respect and confidence of Purchasing Agents everywhere. These men know, from past experience, just how dependable these finely built machines are . . . how long and satisfactorily they serve their owners. Ace Staplers continue to be the quality standard by which all others are judged.

SOLD THROUGH DEALERS EXCLUSIVELY

ACE FASTENER CORPORATION  
3415 North Ashland Ave., Chicago 13, Ill.



(Continued from page 232)

more Paper Company first in the Advertising Department, then the Sales Promotion Department, and for the last 14 years serving as field sales representative in one of Strathmore's most important territories.

On the evening of January 27th, Strathmore gave a going-away dinner to Hughes and the company presented him with a beautifully engraved wrist watch while fellow Strathmoreans presented the Hughes family with a fine set of silver service.

1 1 1

### RUSSELL W. WHITNEY MADE DEPUTY DIRECTOR WPB PAPERBOARD DIV.

The appointment of Russell W. Whitney as a Deputy Director of the Paperboard Division of the War Production Board is announced by G. G. Otto, Director of the Division. Prior to coming to Washington, Mr. Whitney was vice president of the Hinde and Dauch Paper Company of Hoboken, N. J. His home is in Montclair, N. J.

1 1 1

### SPECIAL CARBON COPY PENCIL FOR MULTIPLE CARBONS

Handi-pak is the name of a portable register developed by the Egry Register Company, Dayton, Ohio. It is a companion of the company's Tru-pak, a counter type of register. Another of the company's registers is known as the Com-Pak, a heavy duty register. The Com-Pak may be manually or electrically operated, and is designed to discharge all copies or to retain a record copy automatically.



The Egry Company's HandiPak  
Portable Type Register

folded in a locked, tamper-proof compartment within the register. Another unit is the Com-Pak auditor, a combination of the Com-Pak and a cash drawer in an integral unit.

The Tru-Pak, which is a combination recorder and manifold, is available in seven popular sizes. It discharges all copies or provides protection and control through alteration-proof audit copies automatically filed in locked compartment. The copies are held in perfect registration by what is styled a fold process.

For use with these registers, carbon

copy pencil in three-degree ratings has been developed by the Reliance Pencil Corp. of Mt. Vernon, N. Y. These are—medium, for blackest original and average number of carbons; firm for a black original and a large number of carbons; hard, for less black original and a very large number of carbons. "Firm" is recommended as the most suitable.

Samples of the pencils may be obtained by letterhead request direct to the Reliance Pencil Corporation.

1 1 1

### FRANK B. TOWNE RECIPIENT OF COMMUNITY SERVICE AWARD

Frank B. Towne, treasurer, National Blank Book Co., Holyoke, Mass., is the recipient of a Distinguished Service to Holyoke Award for his "more than half a century of tireless and effective work for community welfare." Commenting on the award, the Holyoke Transcript-Telegram stated, "Holyoke never had a citizen whose life has expressed more fully what the Army and Navy mean when they say 'above and beyond the call of duty.'"

\*\*\*"He has given himself unstintingly to this city for 60 years. He has done it brilliantly, with imagination as well as devotion and he has done it very quietly."

"It has been fashionable in recent years to deplore the development of capitalism in this country. One forgets that the sins of a system are only the sins of the men who form it," concludes the editorial comment. "If ever a city has had a chance

(Continued on page 236)

## A GOOD PAPER MILL CONNECTION

"United Nations" — 25% Rag  
Content Bond

"Britteness" No. 1 Bond

"Waterfalls" No. 2 Bond

"Waterfalls Extra Fine Laid"  
No. 2 Papeterie

"Britteness" No. 2 Offset

"Britteness" No. 2 Manifold

Rag Onion Skin

No. 2 Index

Tissue and Specialties

Sold Thru Established Paper Merchants

**NORTH AMERICAN  
PULP AND PAPER  
CORPORATION**

Cheboygan, Michigan



## "Pursley Doesn't Seem to Grasp This Paper-Saving Idea"

Pursley's "doodling" may not seem very important in itself—but this widespread bad habit is today wasting many a ton of good white paper.

It's worth-while to check up on such practices now that paper is a vital material of war . . . with 25 tons of blueprint paper required to make a battleship and 12 pounds of paper for every 500-pound bomb.



Here are ways in which form users can save paper:

1. Design forms to use fewer parts of smaller size
2. Reduce weight of paper stock
3. Correct minor errors—don't use a new form
4. Don't buy in too large quantities

—and don't forget whenever you use paper:

Don't throw away slightly damaged or soiled stationery

Use both sides of the sheet

Design printed matter to use less paper

Prune the "deadheads" out of mailing lists

*Remember, paper saving is in the national interest—and it's a job in which YOUR co-operation is needed. Let's all starve our wastebaskets and make each piece of paper stretch farther.*

UNITED AUTOGRAPHIC REGISTER COMPANY  
Chicago, Cleveland, Oakland • Offices in All Principal Cities

USE LESS—SO OUR FIGHTING FORCES WILL HAVE MORE





## *Eagle-A* *Contract Bond*

A PAPER OF PRE-WAR QUALITY

History does not record the first "contract" ever put on paper — but history is, in itself, a record of the use of paper for the preservation of information.

Whether the "document" is a personal letter or a deed to valuable property — or a business contract — the paper upon which the message appears must have an impressive and enduring quality.

These desirable factors are inherent in Eagle-A Contract Bond, a crisp, clear, 75% cotton content paper, another quality product of Eagle-A craftsmanship.

Your Printer, Engraver, Lithographer or Stationer will be glad to give you full details about Eagle-A Contract Bond and its companion papers.

**EAGLE-A CONTRACT BOND**

**EAGLE-A CONTRACT RECORD-LEDGER**

**EAGLE-A CONTRACT ONION SKIN**

**EAGLE-A CONTRACT MANUSCRIPT COVER**

**EAGLE-A PAPERS**

**AMERICAN WRITING PAPER CORPORATION**

**HOLYOKE MASSACHUSETTS**

**SAVE WASTE PAPER**

(Continued from page 234)

to see how capitalism can be made to serve the public, Holyoke has had it in the career of Frank B. Towne. Here is living proof that it is perfectly possible for a good businessman to be a good Christian, for a successful business to serve a community, and for charity to be done without condescension. To the young men of Holyoke who are starting out in business, or who will start when they come back from battle, we would like to say "Go thou and do likewise."

Mr. Towne has been a citizen of Holyoke for over 60 years. It was in 1881 that he became employed by the Syms & Dudley Paper Company of that city, and in 1888, fifty-five years ago, he became associated with his father, the late James W. Towne in the National Blank Book Company and took over the post of treasurer, which he still holds.

### CHAMPION PAPER CATALOG

New catalog has just been issued by the Champion Paper and Fibre Co., Hamilton, Ohio, which shows the grades, sizes and weights of paper now being made by the company under WPB limitation Order L120 as amended August 28, 1943 and October 23, 1943. It shows the effect of the limitation order as it applies to the company's standard grades.

### METAL OFFICE FURNITURE COMMITTEE APPOINTED

The Office of Industry Advisory Committees, War Production Board, announces the formation of the General Metal Office Furniture Industry Advisory Committee, with George N. Chandler, Consumers Durable Goods Division as Government Presiding Officer. The membership of the committee consists of:

George H. Alter, Invincible Metal Furniture Co., Manitowoc, Wis.  
C. L. Elofson, Art Metal Construction Co., Jamestown, N. Y.  
E. A. Purnell, The General Fireproofing Co., Youngstown, Ohio.  
William M. St. John, Yawman & Erbe Mfg. Co., Rochester, N. Y.  
J. S. Sprott, The Globe-Wernicke Co., Cincinnati, Ohio.  
H. S. Walcott, Domore Chair Co., Inc., Elkhart, Indiana.

### LIMITATION PLACED ON BOOK PAPER PRICES

Individual increases made after December 1, 1943, by manufacturers in their ceiling prices on book paper cannot be more than \$8 per ton above the price charged the same customer in the October 1, 1941, to March 31, 1942, base period, the Office of Price Administration announces.

This limitation, decided upon after thorough consultation with representatives of the industry, is provided to prevent any extreme increases in price under a provision in the book paper regulation which permits prices to individual cus-

(Continued on page 238)

# Maybe YOU MISSED

our previous offer  
of this thoughtful 64-page study of  
**MODERN PURCHASING  
OPERATION**



We're receiving so many favorable comments for "Purchasing Department—Records and Routines" that we're sure you'll find plenty of food for thought in its 14 chapters of all-new material.

Plenty of ideas too! This book has been prepared strictly from the Purchasing Official's point of view. It outlines answers to all the major problems of operation under present conditions and those of the fast-approaching future, with special emphasis on

**CONTROL** designed to free the executive from routine matters.

**ASSURANCE** of adequate inventories without overstocking or understocking.

**PROTECTION** through adequate information on dependable sources of assembly.

This is no work of theory. It is a thorough going analysis based on expert study of operating procedures that nationally recognized organizations are using today—and using successfully. The coordinated func-

tions of records are treated in detail. Illustrations of actual records that accomplish their purpose without waste of official or clerical time are included.

A phone call, letter or wire to our nearest Branch Office will place this valuable study on your desk. Or if you prefer, ask your secretary to use the coupon.

## NO SUBJECT IS OVERLOOKED IN THIS NEW BOOK!

Purchasing Department Functions ★  
Initiating the Purchase ★ Quotations  
and Price Analysis ★ Index of Vendors  
★ The Purchase Order ★ The Pending  
File ★ Order Follow-Up ★ Vendor's  
Purchase Record ★ Make and Hold  
Records ★ and others of importance.

Your chance to  
spend a  
Profitable Evening  
**FREE**

Remington Rand Inc., Buffalo 3, New York  
Please send me—without obligation—a copy  
of your new study "Purchasing Department  
Records and Routines".

Name.....

Firm.....

Address.....

City & State.....

PUR-3

SYSTEMS DIVISION

**REMINGTON RAND**

Buffalo 3, New York

## The Mammouth "MISSOURI" had to "Be Shown"



U. S. S.  
MISSOURI  
— America's  
newest 45,000  
ton battle  
wagon.  
Official U. S.  
Navy Photo.

buy- **175 TONS OF  
BLUEPRINTS  
BLUEPRINTS**

If, in these days of manpower shortages, only two draftsmen and 18 mechanics could have been assigned to the job of planning and building America's newest and greatest battlewagon, it would take 506 years before the ship could be readied for sea!



But American Industry now effects tremendous time savings through eliminating hand lettering on details and descriptions, typing countless facts and figures on original tracings with CLASSIC "Blueprint - Special" Typewriter Ribbons. Special ink film and ribbon fabric combine to give remarkably sharp, bleed proof, smudge proof impressions. No carbon "back up" sheet is necessary for opacity. The blueprint reproduction is clean and sharp. Ask your dealer or write or phone the Columbia Office nearest you NOW for a demonstration.

# Classic

**BLUEPRINT - SPECIAL  
TYPEWRITER RIBBONS  
C O L U M B I A  
R I B B O N & C A R B O N  
M A N U F A C T U R I N G C O M P A N Y, I N C.**

Main Office & Factory,  
Glen Cove, L. I., N. Y.

NEW YORK • KANSAS CITY, MO.  
CHICAGO • DETROIT • MILWAUKEE  
MINNEAPOLIS • NASHVILLE  
PHILADELPHIA • PITTSBURGH  
CINCINNATI (Harris-Moers Company)  
PORTLAND, ORE.

Also: London, England; Sydney, Australia

## MILLIONTH CARBINE BARREL TURNED OUT BY UNDERWOOD-ELLIOTT-FISHER

"Looking back to the dark days of 1942, it seems almost impossible that industry working with the Ordnance Department has been able to accomplish the miracle of keeping American troops adequately provided," declared Brigadier General G. H.

a national record. In fact General Drewry told the executives that it was largely through the work of the Hartford plant that the nation has developed the most efficient small arms in the world, stated that "In these days when we talk about



Philip G. Wagoner, president and general manager of the Underwood-Elliott-Fisher Co., Hartford, Conn., presents the millionth carbine barrel manufactured by his company to Brig.-Gen'l. G. H. Drewry.

Drewry, commander of the Springfield (Mass.) Ordnance District, at a meeting of the board of directors of the Underwood-Elliott-Fisher Company at Hartford, Conn., at which he was presented with the millionth carbine barrel turned out by the company.

During its 15 months of carbine manufacture, which began with the conversion from the manufacture of typewriters in September 1942, the company has created

billions, the fact of a million is still an incomprehensible achievement."

Philip G. Wagoner, president and general manager of the company, in presenting the chromium plated, inscribed carbine barrel to General Drewry, declared it to be "a symbol of the effectiveness of your organization and the success of one of your large contractors in the carbine program and the war effort."

## MADE DIRECTORS OF NATIONAL BLANK BOOK CO.

Richard M. Weiser and Professor John C. Baker have been elected directors of the National Blank Book Company, Holyoke, Mass. Mr. Weiser is an Industry Panel member of the War Labor Board, a director of the Parsons Paper Co., and a trustee of the Mechanics Savings Bank. Professor Baker is Professor of Business Administration, Harvard Graduate School of Business Administration, and is Regional Director of the Commission on Wartime Placement of College Faculties.

## LIMITATION PLACED ON BOOK PAPER PRICES (Continued from page 236)

tomers to be based upon the highest price charged by the manufacturer in the base period to any purchaser in the same class on the same or a similar grade of book paper, OPA said.

This provision has been applicable to all sales of book paper except spot sales to merchants and except spot or contract sales to the U. S. Government or any of

its agencies. The applicable sales, chiefly contract sales by paper manufacturers to magazines, may be found in Appendix B of the regulation. The provision was incorporated to extend in a modified form the "purchaser of the same class" provision in the General Maximum Price Regulation under which these papers were formerly priced.

Any increases above \$8 a ton made by manufacturers under this provision between August 25, 1943, when the book paper regulation became effective, and December 1, 1943, when the \$8 limitation is applicable, can remain in effect. Actually in this period there were very few price increases by individual manufacturers that were in excess of \$8 a ton, OPA said.

(Amendment No. 1 to Maximum Price Regulation No. 451—Book Paper.)

## ALLEN E. NORMAN HEADS WPB MAGAZINE SECTION

Arthur R. Treanor, a new Director of the Printing and Publishing Division of the War Production Board, announced today the appointment of Allen E. Norman

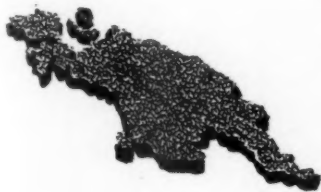
(Continued on page 240)



# INTERNATIONAL COOPERATION



## Red Cross Serves Good Cheer in NEW GUINEA



**T**he American Red Cross, modern miracle of mercy and good cheer, goes everywhere—giving mighty help to the Yanks and

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In the fabric of cooperation being woven

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BUSINESS MACHINES

BURROUGHS ADDING MACHINE COMPANY

## TOWEL AND TISSUE REGULATIONS

### Five Changes Announced by OPA in Amendment No. 6 to MPR Reg. 266

Five changes in the regulation governing paper towels and toilet tissue have been announced by the Office of Price Administration. None of these changes will result in increased prices at the retail level. The changes follow:

1. Price relief is granted to those producers who have been required to sell certain of their items at prices 5 per cent below their October 1-15, 1941, levels. Under the regulation, where manufacturers could not price by the prescribed formula they could charge 95 per cent of their October 1-15, 1941, price. They can now charge the entire October 1-15 1941 price. This move, recommended by the Tissue Industry Advisory Committee, will increase prices to the base period level on only a limited number of products, OPA said.

2. Further action taken also permits a manufacturer to apply for individual adjustments in his ceiling prices where (1) he suffers substantial hardship under existing ceilings, and (2) the War Production Board certifies that the commodity is necessary in the quantity actually to be supplied by the applicant to meet a military or essential civilian need.

3. Retail ceiling prices for paper towels and toilet tissue must not exceed those legally in effect on November 30, 1943.

4. To aid the fibre conservation program of WPB, OPA allows manufac-

turers to reduce the chemical pulp content and basis weight of their products without reducing their ceiling prices. Reductions are limited to 15 per cent of chemical pulp content on which existing ceiling prices are based. The basis weight for paper towels may be reduced not more than 10 percent, and for toilet tissue not more than 5 per cent. Prices will not be increased by this action, the sole purpose being to conserve vital raw materials. Groundwood and waste materials will be substituted for the more vital chemical pulp. This saving of a strategic material will not result in any appreciable reduction in quality, according to experimental tests made by mills. Mills which undertook to produce the substitute products experimentally some time ago were granted temporary permission to sell at prevailing ceilings. This permission is now made permanent and applicable to the whole industry.

5. The marking of pulp class, basis weight and sheet content on shipping cartons for these products is no longer required. As pulp content and basis weight will now vary from what the manufacturers have been using, the marking requirement has been revoked because it would create burdens that would outweigh any benefits.

(Amendment No. 6 to Maximum Price Regulation No. 266—Certain Tissue Paper Products).

### ALLEN F. NORMAN HEADS WPB MAGAZINE SECTION

(Continued from page 238)

as Chief of the Magazine & Periodical Section, to succeed Walter J. Risley, Jr., who resigned to return to the Curtis Publishing Company in Philadelphia.

Mr. Norman, who has served as a Consultant in the Magazine & Periodical Section for the past five months, is secretary of Fawcett Publications, Inc., New York City. His home is in Hartsdale, New York.

### DETGEN SUCCEEDS TOMISKA AS HEAD OF CONTAINERS DIVISION

Edward J. Detgen, of Washington, D. C., has been detailed from the Department of Commerce to the War Production Board where he will act as Deputy Director of the Containers Division, according to Harold Boeschstein, Acting Director of the WPB Forest Products Bureau. E. F. Tomiska is resigning as Director of the Division, effective February 15, and thereafter Mr. Detgen will act as head of the Division.

Mr. Tomiska has been active in WPB affairs since 1942, becoming director of the Containers Division last August. After February 15, when he returns to the Western Electric Company at Kearney, N. J., he will continue to serve as a WPB consultant and advisor.

### USE OF RUBBER CEMENT PROHIBITED IN PAPER PRODUCTS

The Office of the Rubber Director announces several new amendments to the rubber regulations, with the object of further conserving the supply of various types of rubber cement, especially neoprene cement, for essential war purposes.

In general, the new regulations governing synthetic rubber cement can be summarized in this way: whereas synthetic types of cement could formerly be used for the manufacture of any product unless expressly prohibited, the situation is now reversed, particularly in the case of neoprene cement, so that hereafter use of such cements will be banned unless expressly permitted in the rubber regulations.

Synthetic rubber cement, however, is still permitted for shoe manufacturing operations, except for neoprene cement, which may now be used for shoe manufacturing only in specified operations.

Use of any kind of rubber cement is now prohibited in paper products. The only exception is in the case of paper products used in the manufacture of shoes. Previously, rubber cement made from either synthetics or reclaimed rubber was permitted for a number of paper products. The new regulation has the effect of adding such products as greeting cards and graphic-art layouts to the prohibited list, which already includes upholstery, back-

(Continued on page 242)

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NEWARK  
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Zellerbach Paper Co.  
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Central Ohio Paper Co.  
TORONTO, ONTARIO  
United Paper Mills  
WASHINGTON, D. C.  
Barton, Duer & Koch  
Paper Co.  
WORCESTER  
Storrs & Bement Paper  
Co.

(Continued from page 240)

ings for rugs, and many other civilian items.

The new regulations include a special provision permitting manufacturers to paint tires and tubes, and also to clip or shear curing-vent overflow. The latter material is produced in the course of manufacturing, when tires are formed in molds under great heat and pressure. Overflow appears on the finished product as rough irregular tatters of extruded rubber. The previous prohibition against painting tires or removing vent overflow were applied in order to conserve manpower and speed up tire production. The prohibitions have been revoked in order to conform with current recommendations made by the rubber industry and by the Army and Navy procurement services.

The regulations announced are in the form of amendments to Rubber Order R-1.

♦ ♦ ♦

## PAPER INDUSTRY ADVISORY COMMITTEES APPOINTED

The War Production Board announces the formation of the following Industry Advisory Committees:

### Overall Paper Industry

Government Presiding Officer: Rex W. Hovey.

Committee members are: William Anders, Nashua River Paper Co., East Pepperell, Mass.

Grafton Houston, Fort Howard Paper Co., Greenbay, Wis.

Ralph M. Beckwith, Crocker Burbank Papers, Inc., Fitchburg, Mass.

Donald Leslie, Hammermill Paper Co., Erie, Penna.

R. M. Buckley, Sound View Pulp Company, New York, New York.

Clyde B. Morgan, Eastern Corporation, Bangor, Maine.

D. G. Driscoll, Sorg Paper Company, Middletown, Ohio.

Vasco E. Nunez, Nashua Gummed & Coated Paper Co., Nashua, N. H.

D. C. Everest, Marathon Paper Mills, Rothschild, Wis.

Cola G. Parker, Kimberly-Clark Corp., Neenah, Wis.

Roy K. Ferguson, St. Regis Paper Co., New York, N. Y.

S. N. Phelan, Jr., West Virginia Pulp & Paper Co., New York, N. Y.

W. K. Gerbrick, Central Paper Co., Menasha, Wis.

John L. Riegel, Riegel Paper Corp., New York, N. Y.

J. H. Hinman, International Paper Co., New York, N. Y.

H. S. Smith, Maine Seaboard Paper Co., Inc., New York, N. Y.

D. L. Stocker, Michigan Paper Company of Plainwell, Plainwell, Mich.

J. D. Zellerbach, Crown-Zellerbach Corporation, San Francisco, Calif.

### Tissue Paper Industry

Government Presiding Officer: H. O. Nichols.

Committee members are: Milan Boex, Northern Paper Mills, Green Bay, Wis.

Grafton Houston, Fort Howard Paper Co.

(Continued on page 243)

(Continued from page 242)

Company, Green Bay, Wis.

Wayne Brown, Crown Willamette

John McKirdy, Scott Paper Company, Chester, Penna.

Robert Fairburn, Berst-Forster-Dixfield Company, New York, N. Y.

B. I. Reider, Victoria Paper Company, Fulton, N. Y.

Dwight Hollister, A. P. W. Paper Co., Inc., Albany, N. Y.

Robert B. Stevens, Stevens & Thompson Paper Co., Greenwich, N. Y.

B. E. Hopper, Kimberly-Clark Corporation, Neenah, Wis.

R. W. Sweet, Sweet Bros. Paper Mfg. Co., Phoenix, New York.

1 1 1

### CREATE SUBDIVISIONS OF PAPER BOARD DIVISION

The War Production Board Containers Division, except for the sections handling corrugated, solid fibre, folding and set-up boxes, will continue to function under E. F. Tomiska, Director, but will be transferred to the new Forest Products Bureau, Harold Boeschstein, Acting Director of the Bureau announced today.

The Corrugated and Solid Fibre Box Section, and the Folding and Set-up Box Section, formerly parts of the Containers Division, have been made subdivisions of the newly created Paper Board Division under the direction of G. G. Otto.

Other types of paper containers, namely: multi-wall shipping sacks; grocery, variety and specialty bags; fibre cans; paper cups; fibre drums; food pails; liquid-tight containers; milk bottles and closures; as well as textile bags; wooden containers; metal cans, tubes and drums; and glass containers will continue to be handled by the Containers Division, as formerly.

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### PAPER SALVAGE TO CONTINUE INDEFINITELY—8,000,000 TONS NEEDED

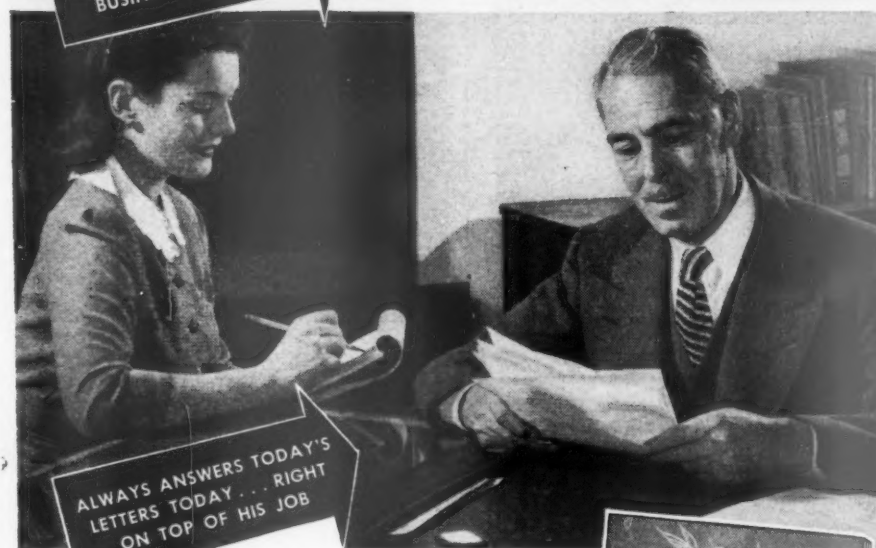
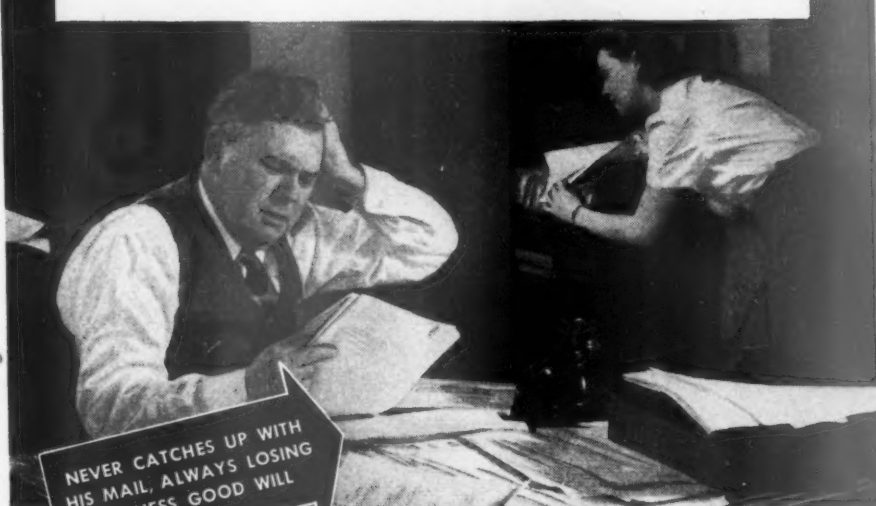
Eastern and western members of the wastepaper consuming industry have renewed their agreement to purchase at OPA ceiling prices all properly processed paper offered to them, the Salvage Division of the War Production Board announces.

The undertaking of the mills to provide an assured market for wastepaper collections, which has been in effect since October 1, 1943, was due to expire February 15, but the new arrangement will continue indefinitely, subject to cancellation on 30 days' advance notice.

Emphasizing that the wastepaper situation is more acute than at any time in the past, Eric H. Marks, Chief of the General Salvage Branch of the WPB, today said, "Terms of the new agreement, contrasted with the former procedure of planning such an undertaking for a three-month period, indicates that the wastepaper shortage will probably be a continuing one, and that under the new procedure participants in the salvage program can carry on their efforts and

(Continued on page 244)

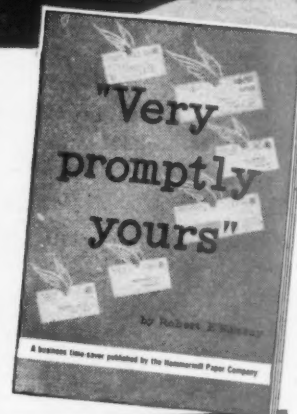
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Manufacturing Company  
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## MUST STRETCH ALLOTMENTS

### Manufacturers of Book Papers Urged to Use Additional Waste Paper and Other Fibers

Manufacturers of book papers, which include most of the graphic art papers except newsprint, were told that they should stretch their pulp allotments so as to make as much paper as possible, by War Production Board officials at a meeting of the Book Paper Manufacturers Industry Advisory Committee.

The WPB Office of Pulp Allocation has set aside 236,121 tons of pulp from which the manufacturers are expected to produce a minimum of 344,196 tons of paper, during the first quarter of 1944, Henry G. Boon, Government Presiding Officer and Deputy Director of the WPB Paper Division, advised the representative book paper manufacturers present.

These figures were compared with the previous proposals of the paper mills, which indicated that with 298,000 tons of pulp they could produce 435,000 tons of paper. However, an equitable allocation of pulp to insure the manufacture of certain essential types of paper and paperboard in sufficient quantities to meet war-time demands, prevented the allocation of more pulp to this segment of the paper industry, the manufacturers were told. Continued shortages of both woodpulp and the wood from which it is made, largely due to woods labor difficulties and truck shortages, has made it necessary to allocate pulp and to urge the use of additional waste paper and other fibres so as to increase the area produced.

Although manufacturers are not restricted as to the production of specific grades of book papers, they are expected to produce the normal usable grades, it was pointed out. Some grades may not come up to peacetime standards, WPB officials said, but usable paper can be produced.

In reviewing the over-all wood situation, it was said that if anticipated 1944 receipts, estimated at 3,228,000 cords per quarter, materialize, inventories will shortly disappear, whereas if 1943 receipts can be secured, they will last a little longer, but if the receipts of 1942 could be counted on, inventories may be increased slightly.

Despite efforts of the WPB and the pulpwood industry to increase the cutting of wood, little improvement is seen, due largely to weather conditions, labor and truck shortages. However, some relief is expected soon in transportation problems, as a substantial number of trucks will soon be made available for hauling pulpwood, it was stated.

Collections of waste paper are gradually increasing, the committee was told, and if the average of the past few weeks is maintained approximately 600,000 tons will be collected in January, an increase of about 66,000 tons over December collections and the highest average since 1942. Paper and board mills, it was stressed, must cooperate in collecting and salvaging paper to keep it coming in regularly, until a maximum is reached.

Rex W. Hovey, Director of the Paper

Division, stated that not all paper is recoverable, but that if the industry can collect 700,000 tons a month, it will be approaching 68 percent of the recoverable paper. Sorting and baling were indicated as essential parts of the drive, and in regions where no paper mills are located, collectors were advised to inform WPB regional officers or mills in neighboring areas, so collections may be effected.

"We have reached heavily into inventories of wood", Mr. Hovey pointed out, adding that pulp mills will be cutting down operations and paper production will drop off, defeating our aim to achieve our production goal. He said he believed we had turned the corner as far as trucks were concerned, but that it remained a maintenance problem, along with labor difficulties and shortages.

1 1 1

### PAPER SALVAGE TO CONTINUE INDEFINITELY

(Continued from page 243)

project their plans well in the future with greater assurance."

Mr. Marks pointed out that should any unexpected conditions arise to alleviate the present acute needs, the 30-day advance notice of cancellation will give the local salvage committees time to cease operations and dispose of their paper. However, he added that with many mills having to close down for days at a time due to lack of supplies, with soaring demands from the armed services for paper products and a serious deficit in civilian supplies, wastepaper has become the nation's No. 1 salvage problem.

"It will require a tremendous effort on everyone's part if the nation achieves the goal of 8,000,000 tons of wastepaper salvage in 1944—one-third more than last year," Mr. Marks said. "But we've got to reach it to keep the war going full force."

### SHORTAGE OF COVERING PAPER FOR SET-UP PAPERBOARD BOXES

Set-up paperboard boxes, those lined and covered with paper in which stationery, clothing, shoes, candy, etc., are packed, will probably be plainer in 1944, in view of the expected shortage of covering paper, the Paperboard Division of the War Production Board has advised the Set-Up Box Industry Advisory Committee. Suitable paper for covering and lining boxes, made almost entirely from pulp, probably will be less plentiful in the second quarter of 1944 than it is now. Some boxes may be produced in the rough.

Two means of remedying the anticipated shortage of boxboard for making set-up boxes were discussed. They are:

The extension of the restrictions imposed by WPB Limitation Order L-239, to balance supply with demands and avoid waste and unessential uses.

The establishment of a priority rating pattern for set-up boxes.



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GOVERNMENT REPORTS  
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Dates and Pay Check Numbers are printed automatically. Protective Stars are automatically printed before the Check amount. When deductions exceed earnings, the Pay Check is automatically voided.

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GET ME **OLD DUTCH  
CARBONS AND RIBBONS**

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Over 25 years of specialization—Vis-  
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Let us tell you about the new ACME  
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# PERSONALITIES in the NEWS

**Dr. Victor E. Wellman** has been made Director of Purchases of the recently created chemical division of The B. F. Goodrich Company, Akron, Ohio. Dr. Wellman, who joined the company in



1929, is a graduate of Phillips University where he obtained a degree in chemistry, later receiving his master's and doctor's degree from the University of Washington. Previous to his present appointment he had been manager of the chemicals and pigments department of the purchasing division.

**G. T. Wickstrom**, has been appointed General Purchasing Agent of the Union Pacific Railroad Co. at Omaha, Nebr., succeeding E. L. Fries who has resigned. He formerly was Assistant General Purchasing Agent.

**Chas. W. Dunnet**, manager of the Mandan Creamery & Product Co., Philadelphia, Pa., was recently elected vice president of the Philadelphia Produce Exchange. Mr. Dunnet was formerly Purchasing Agent for Sears-Roebuck & Co. for eight years, and their new England Regional Purchasing Agent in Boston for four years. He has been in his present connection for the past ten years.

**Stanley S. Weiser** has been appointed Assistant Vice President and Purchasing Agent of the Gas Purifying Materials Co., New York, N. Y. He has been associated with the company since 1931 as Purchasing Agent. In November 1935 he was appointed assistant general manager of the company.

**A. S. Dingethal**, Purchasing Agent, Manufacturers Selling, Trenton, N. J., is the author of an article in a recent issue of Mill Supplies, on "The Missionary Men Are Coming Back." "We certainly have missed them", he writes.

"They are a necessary part of the mill supply business. In a larger way, a missionary man works in the same way that our salesmen do, picking up in his travels new and unusual applications for lines we handle. This wealth of information is the distributor's for the asking, in fact, merely for the listening. During the last two years, calls by manufacturer's men have been poor imitations of what we had grown to know, like and respect. But the pendulum has started to swing back—they're getting back that old fire, they are stressing the quality and ability of their products. Yes, and in some cases they're looking for business."

**Harry G. Barr**, General Purchasing Agent, J. I. Case Co., Racine, Wis., has been promoted to Vice President in Charge of Purchasing. Mr. Barr entered the employ of the J. I. Case Com-



pany in 1910. Starting first in the cost department, he worked there only a short time and then he went into the factory working in the repair shipping, steam engine erecting and testing, and experimental departments. In 1912 he transferred to the Purchasing Department, and in 1938 he was made general purchasing agent for the entire Case organization.

**Harry J. Sanders**, until recently Purchasing Agent for the Mitchell Manufacturing Co., Chicago, has established a manufacturers sales agency under his own name with offices at 60 West Jackson Boulevard, Chicago. He will carry several lines of fluorescent and incandescent fixtures, portable lamps and accessories. He entered the field in 1921 when the wood lamp was at its peak and wrought iron lamps were in vogue. He was then in charge of production and purchasing for Advance-Parcholite which together with Eagle-Wabash was merged later into the Rembrandt Co. He estab-

lished the N. J. Sanders Brass Fitting Co. in 1931, discontinuing that business to join the Mitchell organization in 1937.

**Frederick W. Hankins**, assistant vice president in charge of Purchases, real estate and insurance, Pennsylvania R. R., recently resigned. He has been active in railroad circles for nearly 53 years, 46 of which were spent with the Pennsylvania.

**Ralph H. Sroufe**, Purchasing Agent, Westinghouse Electric Supply Co., Seattle, Wash., has been made division manager in charge of company stores in Waterloo, Des Moines and Davenport, Ia., with headquarters in Davenport.

**A. C. Card** is General Purchasing Agent, Union Pacific Railroad, Omaha, Nebr., succeeding G. T. Wickstrom. He formerly was Assistant Purchasing Agent.

**Cecil S. Walker** now is Purchasing Agent for the Olympic Hotel, Seattle, Wash., succeeding Carl A. Sanders.

**Arthur F. Dallia**, Purchasing Agent, Justrite Manufacturing Co., Chicago, has been appointed to the Board of Governors of the Purchasing Agents Association of Chicago, succeeding N. B. Brown.

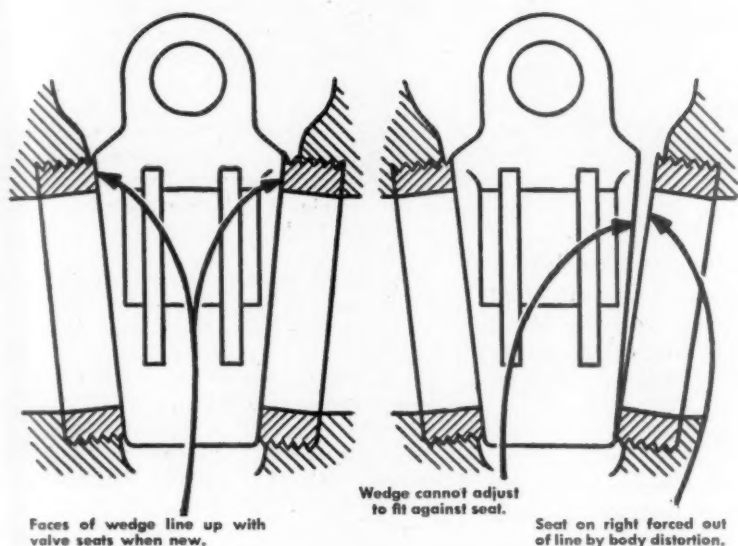
**H. W. Catt** has been appointed manager of the chemicals and pigments department of the Purchasing Division of The B. F. Goodrich Company, Akron, Ohio, according to announcement by A. D. Moss, Director of Purchases. Mr. Catt is a graduate of the University of Illinois



with a degree in chemical engineering. He joined the Goodrich company in 1929, and was engaged for 10 years in chemical research and rubber compounding. He joined the Purchasing Division as a buyer of raw materials and pig-

(Continued on page 250)

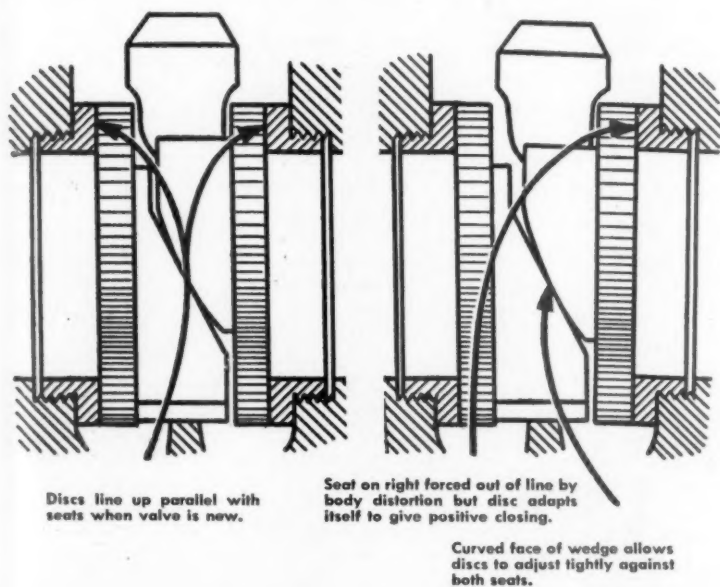
# "Body Blows" THAT KNOCK OUT VALVES



ABOVE—What happens before and after a taper seat gate valve is subjected to body distortion is shown in these somewhat exaggerated diagrams.

## BEFORE AND AFTER

BELOW—How the Darling Fully Revolving Double Disc Parallel Seat gate valve continues to give positive closing despite body distortion.



ANY valve is tight on the drawing board, or on the assembly floor, but frequently a valve is installed with a pipe out of line, so that the valve body is subjected to unexpected "line strains."

Or expansion bends are not properly installed, so that the valve has to take the punishment of expanding and contracting lines.

The distortion of valve bodies is a continuous and almost microscopic process, but is one of the chief causes of leaking valves. Under the body blows of high temperature and pressure the valve bodies will change shape and valve seats will move out of their original line-up, preventing tight closing.

Over forty years ago Darling Valve & Manufacturing Company designed a valve that could take these body blows and still give positive closure. In the Darling Fully Revolving Double Disc Parallel Seat valve, there are two important features:

1. The floating discs are free to adapt themselves to change in the shape of the valve body, and to changed position of the valve seats.
2. The discs are fully revolving, seating in a different position each time, thus wearing evenly and always presenting a uniform surface against the valve seat. Even when worn thin the discs still furnish a positive seal.

Darling is the only valve which has this simple and efficient design. For "positive closing, year after year," thousands of experienced valve buyers specify Darling for all their tough jobs.



**VALVE & MANUFACTURING CO.**  
WILLIAMSPORT, PA.

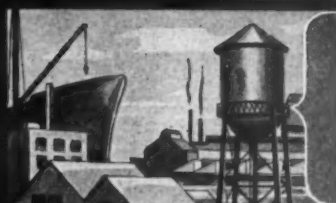
## **JOBS Too Tough FOR Ordinary Paints**

### **VALDURA TAKES IN STRIDE..**

**Valdura Improved Asphalt Paint—the Heavy-Duty Maintenance Paint—Anywhere—on Any Surface—Indoors or Out—Above or Below Ground.**



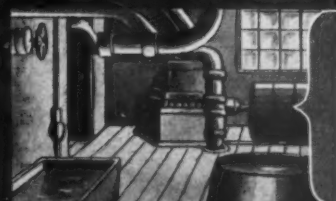
Exposure to severe smoke, fume, moisture, weather, salt sea air, brine, acid and alkali conditions have little effect on Valdura's tough, durable, protective film. It covers up to 500 square feet to the gallon.



Wherever surface protection is important—on stacks, tanks, bridges, marine equipment, Valdura gives low cost, economical service. It can be brushed or sprayed, requires no unusual or special surface preparation and cuts costs 20 to 30%.



Valdura's fade and fume-resistant colors retain their attractive glossy appearance for years under grueling conditions on metal roofs, gutters, fire escapes, fences—on wood, concrete, metal or canvas surfaces—it gives lowest per-year-of-service cost.



The tough, elastic Valdura film withstands the contraction and expansion caused by extremes of temperature. Use it under hot, moist or freezing conditions on pipes, pipe lines, ventilators, foundations. Black withstands temperatures up to 400° F.



*This new attractive Gray with heavy-duty qualities is the answer to the demand for a light-colored, moisture-proof asphalt paint. Write for color card.*



## **AMERICAN-MARIETTA COMPANY**

Executive Offices

43 EAST OHIO STREET • CHICAGO 11, ILLINOIS

(Continued from page 248)

ments in 1939. He succeeds Dr. Victor E. Wellman who becomes Director of Purchases in the newly created chemical division.

**W. R. Elsey** has been appointed Assistant Vice President in charge of real estate, Purchases and Insurance, Pennsylvania Railroad, succeeding F. W. Hankins, retired.

**Vincent deP. Goubeau**, formerly Purchasing Agent, United Fruit Co., Boston, has been made Chief of the Procurement Branch of the Office of Procurement and Material, Navy Department, Washington, D. C.

**T. J. Ruth** is now Purchasing Agent, M. St. P. & S. S. M. Railway, Shoreham Shops, Minneapolis, Minn. He has been Acting Purchasing Agent since February 1943.

**Charles L. Sheldon**, Purchasing Agent, Hood Rubber Co., Watertown, Mass., writes on the container situation in the current issue of Harvard Review. Mr. Sheldon is former Director of the Container Division of WPB.

**W. Raymond Whitehouse** has been named Purchasing Agent for the Electric Game Co., Holyoke, Mass. He was formerly assistant treasurer of the Judd Paper Co.

**Frank R. Junier** has been appointed Purchasing Agent at the plant of the United States Navy, Elmira, N. Y.

**Leo Lebryk** is now Purchasing Agent for Barrett-Christie Co., Chicago, succeeding N. B. Brown, resigned.

**P. L. Grammar**, Assistant Purchasing Agent of the Pennsylvania Railroad, recently retired, after more than 52 years of continuous service. He was appointed assistant purchasing agent in 1928.

**C. Warner McVicar**, Purchasing Agent, Detroit & Cleveland Navigation Co., Detroit, Mich., on leave of absence, has been appointed Chief of the Contract Clearance Division of the Office of Procurement and Material, Navy Department, Washington, D. C.

**John B. Wuehrmann**, vice president of the Metropolitan Purchasers' Assistants Club, New York, N. Y., was recently sworn into the Navy with an ensign's commission.

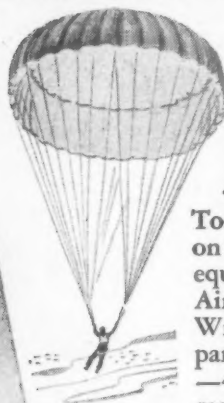
**Stuart F. Heinritz**, editor of PURCHASING Magazine, was a speaker at recent meetings of the Wilmington Purchasing Agents Luncheon Club, Wilmington, Del., and of the Eastern Section of the Educational Buyers Association in New York City. He also lectured on "Purchasing" in the Columbia University course on Training for International Administration, a group which will take

(Continued on page 252)



# BAILING OUT FROM 8 MILES UP

## —WHAT IT TAKES TO MAKE A RECORD PARACHUTE JUMP FROM 40,200 FEET ALTITUDE



Now that planes get up to 30,000 and 40,000 feet, airmen face the possibility of having to jump from altitudes as high as 8 miles up. Reaching the ground safely from the stratosphere presents many special problems—one of the most important is breathing.

To ascertain the effect of extreme altitude on the body, and to test emergency bail-out equipment, an officer of the U. S. Army Air Forces' Aero Medical Laboratories at Wright Field, recently made the highest parachute jump ever performed in America—40,200 feet from a Boeing Flying Fortress. The descent took 23 min. 51 sec.

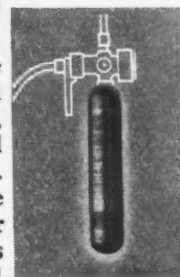
"I found out just exactly what I wanted," he said. "Now, we can say to the men, 'Okay, if you do have to get out, you can do it.'"

When flying in the "thin" air of high altitudes, aviators must be equipped with oxygen masks. Oxygen cylinders aboard the plane provide the source of supply, but if it becomes necessary to "bail out," the flyer must carry his oxygen with him.

The officer carried this reserve supply of oxygen in two metal bottles or bail-out cylinders, under high pressure, each good for about 20 minutes' supply.

They are zippered into the thigh pockets in the outer flying suit. One bottle is connected by tube to an oral-nasal mask; the other is fed into a tube only, to be put into the mouth if the mask should fail to function, or the oxygen in the mask bottle should be exhausted. Before jumping, or in the event the plane oxygen supply is disrupted, the aviator turns a valve on the bail-out cylinder and breathes from this reserve supply of oxygen.

Metal oxygen bottles or bail-out cylinders are manufactured from Globe Seamless Steel Tubing. These cylinders are subjected to exacting metallurgical and ballistic tests. Globe ability to produce steel tubes of exacting characteristics is helping to make equipment of vital importance to our armed forces of the air.



This is what the well-dressed U. S. Army flier wears when he decides to bail out from 40,200 feet. Before climbing to this extreme altitude in a Boeing Flying Fortress, the test jumper wore regulation underclothes, trousers and blouse; an outer suit of gabardine and under it processed "chicken feather" suit for extra warmth; helmet and goggles, two pairs of gloves — one of silk, next to the hands — and another of leather.

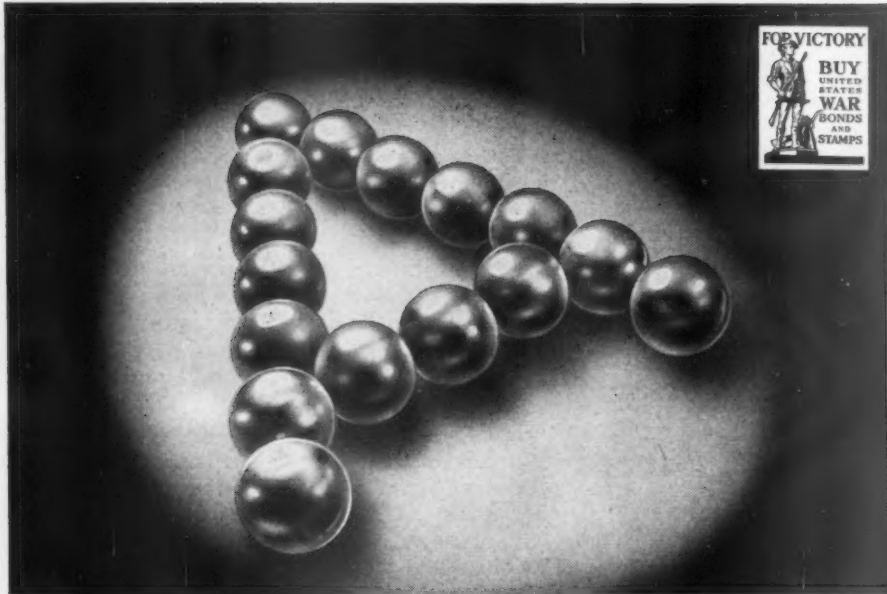
# GLOBE STEEL TUBES CO., Milwaukee 4, Wis., U. S. A.

- ★ STAINLESS TUBES
- ★ BOILER TUBES
- ★ GLOBEIRON TUBING
- ★ GLOWELD TUBES



- ★ CONDENSER AND HEAT EXCHANGER TUBES
- ★ MECHANICAL TUBING

5009



## CARRY THE LOAD AS PLANNED

# ROLL ON ABBOTT *Bearing* BALLS

## GET UNINTERRUPTED PERFORMANCE

Production schedules are met — contracts are fulfilled — **UNINTERRUPTED PERFORMANCE** is achieved from each piece of equipment — each mechanism . . . Users are proving daily that time and labor are saved because their BEARING BALL assemblies are "ABBOTT" . . . ABBOTT has the answers to BEARING BALL problems. Your "tough performance job" may be a "regular" for ABBOTT. Get the vital UNINTERRUPTED PERFORMANCE by specifying "ABBOTT" — carry the load as planned.

ASK FOR DELIVERY ESTIMATES ON THE GRADE OF BALL TO MATCH YOUR STANDARDS OF PRECISION.

SPECIFY "ABBOTT"

ROLL ON **ABBOTT** *Bearing* **BALLS**  
THE ABBOTT BALL COMPANY HARTFORD, CONN. U.S.A.

(Continued from page 250)

over the staff duties for relief organization in foreign territories occupied by our military and naval forces.

**Charles B. Anderson**, former credit manager and Purchasing Agent for the John Day Rubber & Supply Co., Omaha, Nebr., is now associated with the Lyle V. Barnes agency of the Equitable Life Insurance Company of Iowa. He is a member of the Junior Chamber of Commerce.

**Mrs. Monnie Coulter**, for the past nine years assistant steward and Purchasing Agent of the Los Angeles Biltmore, has succeeded Clinton K. Elliott as Purchasing Agent. She in turn is succeeded by A. B. Caldwell. Mrs. Coulter's son is a pilot in the U. S. Air Forces.

**Wm. R. Smith**, Tenaflly, N. J. was recently appointed County Purchasing Agent by the Board of Freeholders, succeeding Wm. S. Moore of Ridgewood, N. J.

**Henry J. Dowling** has been appointed Purchasing Agent for the City of Waterbury, Conn., for the next two years, succeeding Martin J. Sweeney, and has made James Lawlor his Assistant Purchasing Agent.

**Frank Kesterman** has been appointed Purchasing Agent for the American Manufacturing Company, Brooklyn, N. Y., succeeding W. F. Metzler who has been made president of the Greenpoint Terminal Corporation, a subsidiary of American.

**Kenneth A. Anderson** is Purchasing Agent for the United Color and Pigment Co., Newark, N. J., succeeding James Price, Jr., who is reported to have resigned to go into business for himself.

**Fred W. Keyo** has been made Purchasing Agent for A. & M. Karagheusian, Inc., New York, N. Y., succeeding E. Bachman who now is assistant to the general manager of the Freehold, N. J. mill of that company.

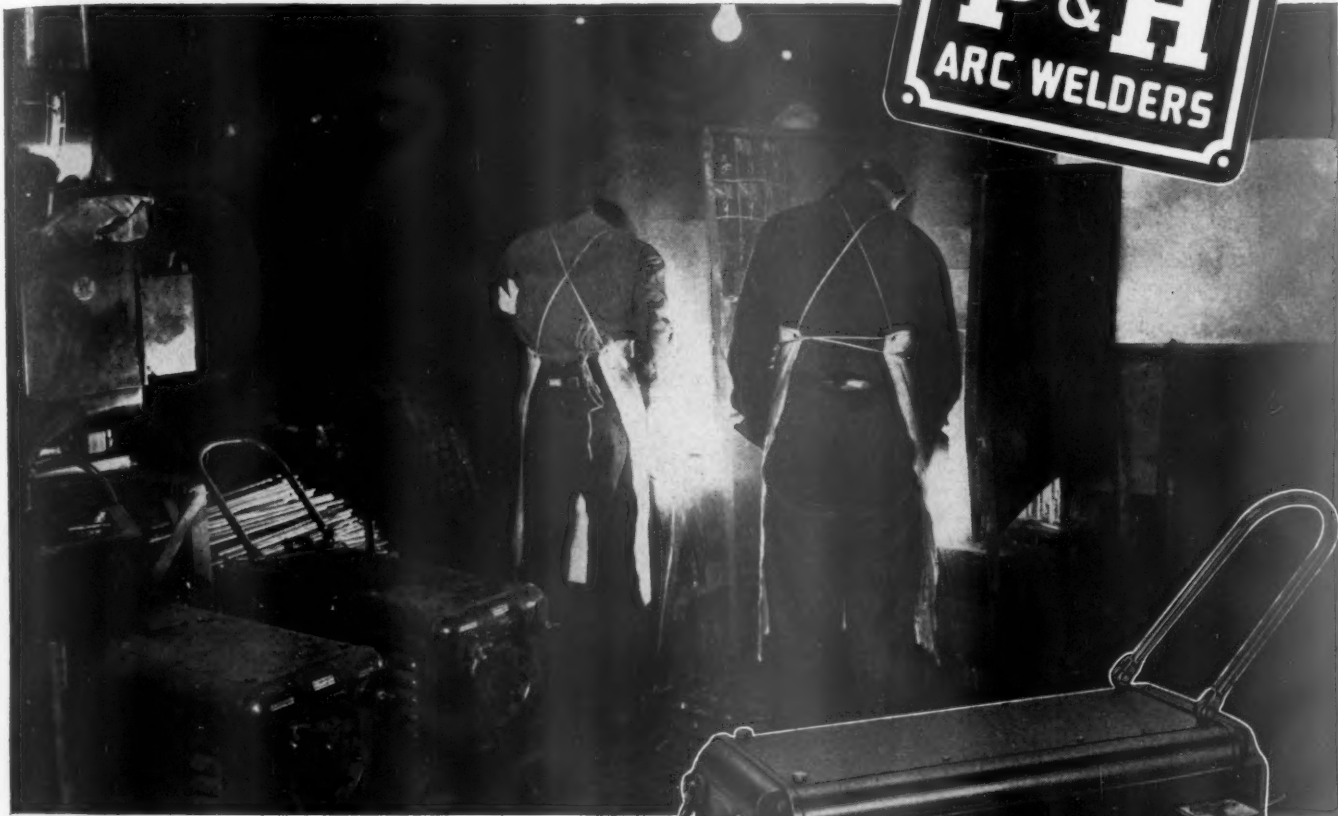
**Frank R. Junier** has been made Purchasing Agent at the plant of the United States Navy in Elmira, N. Y.

**Carroll G. Holloway**, Purchasing Agent, Isaacson Iron Works, Seattle, Wash., is the author of an article on the subject "Forging Ahead on Discarded Rams", in a recent issue of Metco News, house organ of the Metallizing Engineering Co., Inc., Long Island, N. Y. His article deals with the rehabilitation of rams by the metallizing process at his company's forge plant at Seattle.

**Walter R. Youngberg** of Elmhurst, Ill., has been appointed State Purchasing Agent, Springfield, Ill., succeeding Col. Edward Davis of Evanston, Ill.

(Continued on page 254)

# Operators **"CATCH-ON"** Quicker



## SIMPLER TO OPERATE

These outstanding advantages mean simpler operation to speed production, reduce training time and assure better welding results to aid the war effort.



**SINGLE HEAT CONTROL**—An infinite number of current settings with but one simple adjustment. An operator can't be confused. Machine provides automatic arc response on all classes of work—with all classes of electrodes.



**"VISI-MATIC" CALIBRATION**—Enables operators to select exactly the right current across the arc for each of the three classes of electrodes—high, medium, or low voltage.



**WSR (Welding Service Range) RATINGS**—Shows the exact limits of usable welding current the machine will deliver, from minimum to maximum capacities. There is no guesswork. You know what you can do.

## CUT YOUR WELDING COSTS

With these vital advantages, operators spend more time actually welding, reducing time and costs.



Moreover, square frame design permits stacking of machines and instant parallel hook-up. You can use two separate services or the combined amperage of two, or even three, machines in one service. It gives you greater welding flexibility, greater convenience and lower costs.

See your nearest P&H representative,  
or write us for literature.

General Offices:

4577 W. National Avenue, Milwaukee 14, Wisconsin

**HARNISCHFEGER**  
CORPORATION  
ARC WELDERS • EXCAVATORS • ELECTRIC CRANES • P&H MOTORS • HOISTS • WELDING ELECTRODES

Canadian Distribution: The Canadian Fairbanks-Morse Company, Ltd.



# EXPECT GREAT THINGS

in



## Electric Water Coolers

● We always did think Cordley Water Coolers were tough, but battle conditions on Navy and Maritime ships have proved it! Because they —

- Stand up under severe battle-fire shocks.
- Permit quick repair in case of damage.
- Handle unexpected personnel increases.
- Give higher cooling capacity in less space.

Now released for military and industrial uses on shore in addition to shipboard use.

Write us about your needs.



*Remember  
the name*

# CORDLEY AND HAYES

456 FOURTH AVE., NEW YORK 16, N. Y.

SPECIALISTS ON DRINKING WATER EQUIPMENT SINCE 1889

(Continued from page 252)

**William Averell** has been named Production Manager and Purchasing Agent of the Paul Klemtner Co., Newark, N. J.

**E. A. LeSuer** is Purchasing Agent for the Erie Engine & Mfg. Co., Erie, Pa., successor to the Allen and Nagle Companies of that city, manufacturers of rubber machinery.

**Hilton Talbot**, Purchasing Agent, Bellingham (Wash.) Marine Railway & Boat Building Co., recently spoke at a Lions Club luncheon meeting in Bellingham on postwar planning.

**Frank Fahey**, Purchasing Agent, Libby, McNeill & Libby, Seattle, Wash., has been transferred to the San Francisco office, where he will serve in a similar capacity.

**Willard V. Pope**, City Purchasing Agent, Seattle, Wash., recently went to the city council departmental efficiency committee with seven volumes of federal regulations in support of his request for one additional clerk which his Purchasing Department needed to keep abreast of all new government rulings. The city council surprised him by awarding him two new clerks for the duration. *Washington Purchasing Agent & Manufacturer.*

**B. C. Godbehere** has been appointed Purchasing Agent of the H. D. Lee Company, Kansas City, Mo. He has been with the company since 1937, and previously had been manager of the P. D. S. Garment Company. He will direct all buying operations of the concern, with a corps of buyers under his direction. He will personally buy all cotton piece goods.

**R. D. Cummings** has been made Assistant Purchasing Agent, Delaware & Hudson Railroad, Albany, N. Y.

**Roland M. Brennan**, Purchasing Officer, District of Columbia, Washington, D. C., who is also Conservator, heading the District's conservation and waste prevention program, recently addressed a Public Schools Conservation meeting on conserving materials, supplies and equipment in Washington's schools. In the course of his talk he stated "Don't fool yourself that conservation will end with the war. It will not. The Commissioners of the District of Columbia have announced that the principles of conservation will be continued for sometime to come." He stressed the need for conservation of paper, fuel, electricity and water, and stated that all machinery should be inspected periodically and kept properly lubricated. "Office machines of all types should be protected and the principles of protective maintenance applied. I see a great opportunity in training pupils in the care and maintenance of typewriters and other office machines, a practice which they should carry with them into the business world," he said.

(Continued on page 258)



The Asbestos Packed Cock is a READING-PRATT & CADY "original"—made to hold a constant, tight seal and give you real service.

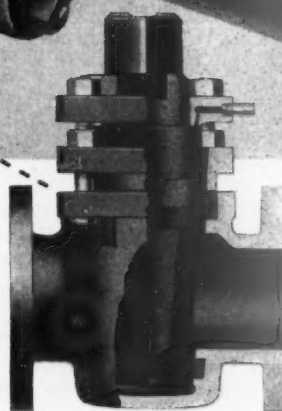
### How?..

1. Because of its well-engineered, simple plug, bolted cap design.
2. Because of its asbestos packed U-grooves that:
  - a. Provide a tight seal.
  - b. Wipe from seating surfaces the foreign matter that other cocks grind in.
  - c. Minimize normal friction.
  - d. Provide a cushion to absorb the expansion differential between metal of the plug and body.
  - e. Can be repacked at the factory, restoring the cocks to good-as-new condition.
3. Because it's made of materials that stand up under services for which they are recommended.
4. The holding down gland design illustrated results in much easier operation and much longer life.

### Where?.. for shut-off service on lines that carry:

1. Solids in suspension • 2. Viscous fluids • 3. Oils • 4. Acids and alkalis • 5. Steam, for boiler blow-off

Paper mills, steel mills, packing houses; soap, dye stuffs and by-products plants use this cock in many of their process lines—wherever Globe, Angle or Gate Valves fail or ground cocks prove unsatisfactory. The petroleum industry uses it on gas wells, pipe lines, refinery lines, general "filling" lines, etc. Currently made in cast iron, bronze and cast steel—according to the needs of the service.



Cross section shows the location of the U-groove. Made in either single gland or double gland design. In the double gland design (illustrated) the top gland holds the plug at a pre-determined, constant pressure while the second gland independently compresses gland packing.

## READING-PRATT & CADY

MANUFACTURERS OF

READING CAST STEEL VALVES AND FITTINGS • PRATT & CADY BRASS AND IRON VALVES  
D'ESTE VALVE AND ENGINEERING SPECIALTIES

Reading, Pa., Atlanta, Boston, Chicago, Denver, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco



A DIVISION OF

AMERICAN CHAIN & CABLE COMPANY, Inc., BRIDGEPORT • CONNECTICUT



**A GOOD WELD**  
*Begins with a GOOD ROD*

Tested on a broad scale for the first time, by the strenuous demands of all-out war production, welding has "grown up". It now meets every imaginable need from work on light sheet to the welding of an entire ship. And out of all this emerges the very valuable fact that *only a good rod does a good job!*

Back of Seymour Phosphor Bronze Welding Rods is a long experience in manufacturing Phosphor Bronze for fabrication. They are specially alloyed to produce welds of high tensile strength—and proof that they do this is their large-scale use in the principal war plants of the country.

Contingent upon state of supply, Seymour Phosphor Bronze Welding Rods may be had, under war regulation, through your welding supplies dealer.

IN GRADES  
A, C AND D

SEYMOUR  
PHOSPHOR BRONZE

## SEYMOUR Phosphor Bronze WELDING RODS

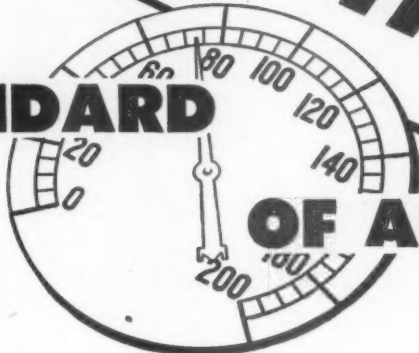
The Seymour Mfg. Co., 55 Franklin St., Seymour, Conn.

NON-FERROUS  
ALLOYS Since 1878



# MARSH

## "THE STANDARD OF ACCURACY"



### *This isn't just our own appraisal!*

For many years this expression has been associated with Marsh Gauges and Dial Thermometers.

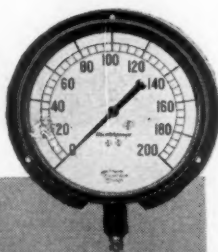
We call it an expression, rather than a slogan, because slogans are trumped up. This expression simply *came up*. We enclose it in quotation marks because it expresses the feeling of hundreds of users toward Marsh instruments. Marsh instruments *have* become the standard of comparison; Marsh *is* "the standard of accuracy".

When a product reaches such a position, few people ask how it got there. But if you ever take the trouble to check back over the many years during which Marsh has been making gauges, you will find that there is no mystery about it.

You will find that Jas. P. Marsh Corporation has not only shown the way in big developments, but has always given more attention to the small details . . . that count most. You will find, moreover, that this fidelity of detail is not confined to the more expensive instruments, but is common to all Marsh equipment in relation to the service for which it is built.

Why settle for less than the instruments that set the standard?

JAS. P. MARSH CORP., 2054 Southport Avenue, Chicago 14, Illinois



### THE GAUGE WITH THE "RECALIBRATOR"

A gauge built to Marsh Standards is not likely to be knocked out of adjustment. But if it is, the Marsh "Recalibrator" will quickly restore its accuracy. Simply turn the "Recalibrator" screw until the pointer is at zero when not under pressure. The gauge will then be right at all points on the dial. Unlike other methods of resetting, the "Recalibrator" gets at the root of the error—re-establishes the relation of the bourdon tube to the movement—actually recalibrates the gauge.



## These Idlers Increase Production

There are idlers and idlers. Some are no good to themselves or anyone else. But, when the simple change over of a polishing lathe to use of abrasive cloth belts by installing an Idler Backstand increases production as much as four times—that's worth looking into.

**At the wheel:** scientifically controlled abrasive cloth cuts faster, cooler, and more uniformly than a set-up wheel; dissipates heat through a constantly changing cutting surface; reduces your loss of polishing grain; makes changes of the fifteen available grit numbers a matter of only a few seconds—slip one belt off, another on.

**Between pulleys:** you have the facilities of a flexible belt for sanding and polishing tubes or rounds, or a platen may be set up for flat grinding. With factory-made Metalite Cloth Belts you have assured greater cutting speed plus uniformly smooth cutting action resulting from our even-running Uniflow Belt Joint.

Our Field Engineers are thoroughly equipped to explain the distinctive features of various Idler Backstands now on the market, so easily adaptable to this faster, better, modern method of finishing—the use of technically controlled abrasive cloth.



**BEHR-MANNING · TROY, N. Y.**

(DIVISION OF NORTON COMPANY)

RELIABLE COATED ABRASIVES SINCE 1872

### AMONG THE COMPANIES YOU BUY FROM

**Gordon F. Ives** has been appointed advertising manager of Walter Kidde & Co., Inc., Bloomfield, N. J., succeeding C. E. Gischel, now Director of Product Development.

**Donald A. Sutherland** has been appointed field engineer in charge of sales and



sales promotion activities for McCulloch Engineering Corp., Milwaukee, Wis., which is a division of Borg-Warner.

**G. H. Tobelman** has joined the sales department of Wolverine Tube Divn., Calumet and Hecla Consolidated Copper Co., Detroit, as manager of the Eastern territory with offices in New York City. Other changes in the sales department include C. E. Rinaman, manager, Boston territory; W. C. Gernhard for Philadelphia; and F. R. Meier who will cover greater New York.

**William A. Patterson**, president, United Air Lines, Inc., has been elected a member of the board of directors of Stewart-Warner Corp., Chicago. Frank A. Hiter, vice president and director, was designated senior vice president.

**George P. Gray** has been promoted to general sales manager of the Brush Division, Devoe & Reynolds Co. with



headquarters in Princeton, Ind. He has been succeeded as field manager of the Western Division by Kenneth Wood.

**Charles L. Foley** has been appointed engineering sales representative of Kropp Forge Co., Chicago, for New York and adjacent territories.

**E. V. Wetmore** has been named New England District Manager in charge of

(Continued on page 262)

## Production Executives agree: "No Reconversion from American Phillips Screw-Driving

... from now on we'll need  
that Speed and Cost-Control  
more than ever before"



There's one sure thing in the plans of modern war plant executives . . . they'll never go back to the slow, slip-and-slash, high cost method of assembly with old-fashioned slotted head screws. They'll hold the gains they've made with American Phillips Screws which average better than 50% in assembly time, plus the elimination of rejected work and spoiled materials, thanks to the automatic alignment of the 4-winged Phillips Driver that stays with the tapered recess until the screw has been set up straight and tight.

A comparison of the cost of driving Phillips and Slotted Head Screws will show that it actually costs less to have the advantages of the Phillips Recess.

American brand of Phillips Recessed Head Screws are made under rigid laboratory check, and a unique system of piece inspection. Delivery service is maintained by high speed production. And engineering service is at your service on any special fastening problem.

### AMERICAN SCREW COMPANY PROVIDENCE, RHODE ISLAND

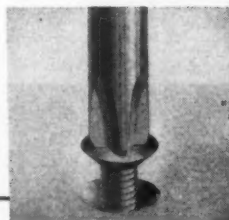
Chicago: 589 E. Illinois Street

Detroit: 502 Stephenson Building

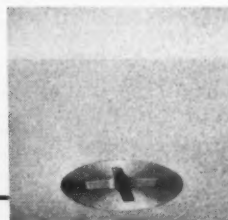
ONLY PHILLIPS SCREWS HAVE THE  
ENGINEERED TAPERED RECESS



**1. Fast Starting**—Driver point automatically centers in the recess . . . fits snugly. Screw and driver "become one unit." Fumbling, wobbly starts are eliminated.



**2. Faster Driving**—Spiral and power driving are made practical. Driver won't slip out of recess to injure workers or spoil material. (Average time saving is 50%.)



**3. Better Fastenings**—Screws are set up uniformly tight, without burring or breaking heads. A stronger, neater job results and there are no gouges on work-surface.

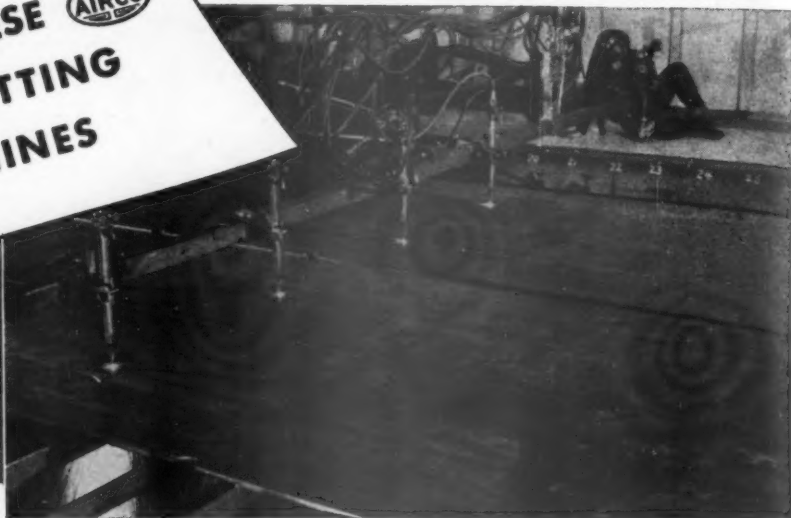
Put the Screws on the Axis ★ BUY WAR BONDS



# Making OXYGEN do



Cutting intricate shapes for ship work with a multiple-torch Airco Oxygraph. Manual tracer controls torch movement.



Indicative of the wide cutting range of an Airco Travograph is this cutting scene in a West Coast shipyard.



Odd shapes like this are easily cut by the Airco Planograph, guided by a magnetic tracing device.



Beveling a steel part for welding, one of many shop operations that are speeded up by the light, portable Airco Radiagraph.

In addition to supplying oxygen guaranteed 99.5% pure, Air Reduction manufactures the most complete line of motor-driven gas cutting machines. These Airco machines include models designed to meet every steel cutting need in industry — from shaping and squaring large ship plates to cutting an infinite variety of small steel parts.

Airco's large cutting machines include the Travographs, Oxygraphs and Planographs for multiple-torch cutting of large metal shapes; and Camographs for quantity cutting of small parts. Portable machines for straight, circular cutting and plate-edge beveling include Airco's three Radiagraphs. In addition, Airco makes machines for beam splitting, continuous curved bevel cutting and many other special operations.

Your nearest Air Reduction office will provide full details on the Airco gas cutting machine that best meets your requirements. Call or write for further information.



## AIR REDUCTION

General Offices: 60 EAST 42nd STREET, NEW YORK 17, N. Y.

In Texas: MAGNOLIA AIRCO GAS PRODUCTS CO. • General Offices: HOUSTON 1, TEXAS

Offices in all Principal Cities

# better work for industry



WITH   
FIELD ENGINEERING  
ASSISTANCE

To assist industry in using Airco oxygen to maximum advantage, Air Reduction offers the services of its nationwide Applied Engineering Field Service Department. This trained and experienced staff has acquired extensive "know how" in applying oxyacetylene flame and electric arc methods to solve many metal working problems.

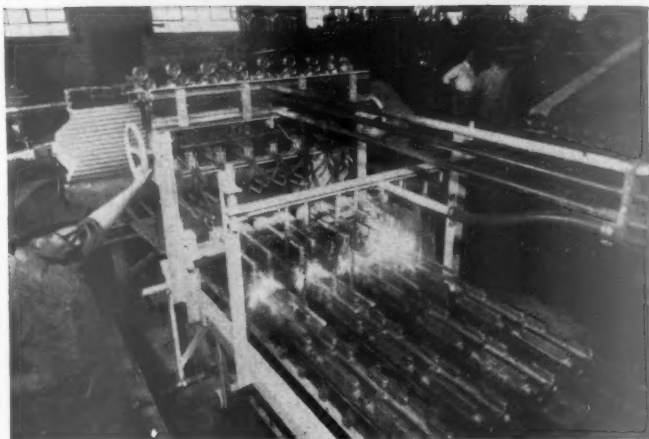
If you work with metals and want technical assistance on any flame or arc application, Air Reduction engineers will gladly cooperate. Their services are available without cost to all users of Airco gases.

## HOW SERVICE HAS HELPED OTHERS

**A MID-WESTERN FOUNDRY** producing castings for war use needed a faster, better method for removing risers from castings. Airco Applied Engineering Field Service representatives helped them develop this mechanical flame-cutting arrangement. The casting is mounted on a motor-driven turn table and revolves before an adjustable Airco cutting torch. With this set-up, the woman operator removes risers from 40 to 45 castings per day — much faster production than before, and a far cleaner cutting job.



**A SOUTHERN MANUFACTURER** required a mechanical method for flame hardening steel tank treads. Airco Applied Engineering Field Service devised this mechanical set-up which employs eight Airco heating torches and eight quenching jets. The tank treads move on a conveyor belt. With this machine, the manufacturer flame-hardens treads at the fast rate of 100 per hour.



The above cases, and countless others like them, indicate the helpful engineering service offered by Air Reduction to all users of Airco gases. This service is available through Air Reduction offices all over the nation as part of Air Reduction's *complete* oxygen service to industry.

### OTHER AIRCO PRODUCTS

for welding, cutting, flame-hardening, flame-cleaning and electric arc applications:

Oxygen, Acetylene, Nitrogen, Hydrogen and Rare Gases  
Arc Welding Electrodes and Supplies

Acetylene Generators  
Gas Pressure Regulators  
Gas Welding and Cutting Apparatus and Supplies

Gas Welding Rods  
Gas Cutting Machines  
National Carbide  
Wilson Arc Welding Machines

# NON-CORROSIVE

... another great SCAIFLUX  
advantage on your  
SILVER ALLOY BRAZING JOBS!

## SCAIFLUX

Joined with the many exceptional brazing advantages of SCAIFLUX is its *freedom from corrosion*—enabling fluxed parts to be set aside or stored indefinitely without harm to finely-finished surfaces. SCAIFLUX is *alkaline*—is an adhesive liquid when preheated to 160° F., with low surface tension permitting perfect close-tolerance joints. See how this revolutionary brazing flux can speed and improve *your* silver alloy brazing practice—write today for Bulletin No. 316.



### SCAIFE COMPANY

GENERAL OFFICES AND WORKS: OAKMONT (Pgh. District), PA.

Representatives in Principal Cities

(Continued from page 258)

Westinghouse Electric Supply Co. to succeed V. C. Bruce Wetmore who will devote himself to the overall Company interest in its customer relationships.

Paul W. Polk, vice president in charge of field distribution and engineering for



The Sheffield Corp., Dayton, O., has been granted a leave of absence to accept a commission in the U. S. Navy.

H. N. Arbuthnot has been named Detroit regional manager for Allegheny Ludlum Steel Corp., Brackenridge, Pa. This is a newly created post to consolidate the company's facilities in the area.

Bennett S. Chapple, Jr. has been named assistant to the president of the Firth-Sterling Steel Co., McKeesport, Pa. Mr. Chapple comes from the position of assistant manager of sales of the New York district of the Carnegie-Illinois Steel Corp.

D. I. Packard has succeeded Charles Riddell as Chicago district manager of The Baldwin Locomotive Works, Philadelphia. Mr. Riddell will continue as special representative at the Chicago office.

R. B. Tucker, who has been director of glass sales for Pittsburgh Plate Glass Co., Pittsburgh, Pa., has been elected a



vice president of the company. He has been with Pittsburgh Plate since 1929 and was elected to the board of directors in 1942.

E. E. Williams has been appointed sales manager of the Laboratory and Measuring Equipment Section of the General Electric Specialty Division, Schenectady, N. Y.

Richard J. Brown has been named export manager for the James P. Marsh  
(Continued on page 264)



# BIRDS OF A FEATHER . . .



Ewing Gallo

Mocking birds don't mate with meadow larks . . . nor do robins and barnyard ducks lay eggs in the same nest. Birds of a feather just naturally flock together . . . keeping each species separate, distinctive, true to type.

It's the same way with Welding Electrodes.

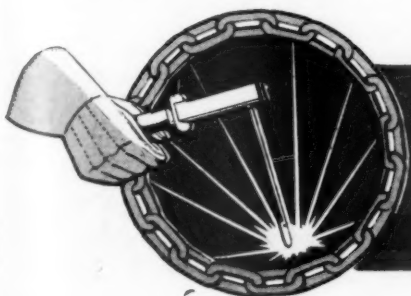
Each technological welding application requires electrodes of individual chemical and metallurgical properties . . . maintained absolutely *true to type* in *every classification* and in *each rod* of that classification.

The McKAY COMPANY, in developing better

Welding Electrodes, rigidly adhered to the policy of making *each* grade of electrodes "a leader in its line." Just to make sure that no "ugly duckling" will ever appear **McKay Stainless, Alloy or Mild Steel Welding Electrodes** are constantly "researched" in one of the nation's great technical institutes.

The same careful control is exercised in the development and production of other McKAY products including **Commercial Chain** for every purpose and **McKay Tire Chains**.

**General Sales Office: York, Penna.**



**THE McKAY COMPANY**  
PITTSBURGH, PA.

WELDING ELECTRODES . . . COMMERCIAL CHAINS . . . TIRE CHAINS

## You Could Put Up WARNING SIGNS.



But a Much Better Way to  
Prevent Costly Accidents  
is to Keep Floors SAFE with

**Carey**  
**ASBESTO-SORB**

Wartime is NO time for accidents. Every man-hour lost is the enemy's gain.

Oily-grease-covered floors are constant accident hazards. Workers may easily slip and fall . . . serious injuries may result, costly in time, money, and lowered output. And there's the ever-present danger of fire.

By using CAREY ASBESTO-SORB you can reduce all these hazards to a minimum, thereby safeguarding your workers.

ASBESTO-SORB is the super-efficient, economical product that keeps floors dry and SAFE—free from dangerous oil and grease. A trial will convince you. Send TODAY for information and sample for making your own test. Address Dept. 68.



### —THE ASBESTOS— OIL and GREASE ABSORBENT

CAREY ASBESTO-SORB has an affinity for oil and grease. Oily deposits are instantly absorbed . . . so quickly and easily it seems like magic! Floors are left clean, dry, non-skid—SAFE.

ASBESTO-SORB is non-inflammable, and harmless to floors, hands, shoes,

clothing. Economical—can be used over and over again. Quickly spread by hand, easily swept up.

ASBESTO-SORB may also be spread as a cushioning floor mat. Doesn't "ball up" and is not tracked around the plant.



### FIRE SAFE!

ASBESTO-SORB will not burn. Rated "Class I, Non-Combustible" by Underwriters Laboratories, Inc.—another quality important to you and the war effort.

THE PHILIP CAREY MANUFACTURING COMPANY, Lockland, Cincinnati, Ohio  
Dependable Products Since 1873.

In Canada: The Philip Carey Co., Ltd., Office and Factory: Lennoxville, P. Q.

(Continued from page 262)

Corp., Chicago, Ill. Mr. Brown was a former Army Captain, now reverted to inactive status.

Harry K. Werst, partner in Booz, Allen and Hamilton, has been appointed vice president in charge of manufacturing for



the Elastic Stop Nut Corporation of America, Union, N. J. Mr. Werst has had extensive experience in manufacturing operations and is a member of A.S.M.E.

B. J. Sackheim, president, Manufacturers Screw Products Co., Chicago, was named in *The Chicago Sun Honor Roll* for effecting "a 22% increase in production at his plant during the last six months of 1943 by a concerted campaign against absenteeism among workers".

Robert R. Hirsch has been appointed director of sales for The Bunting Brass & Bronze Co., Toledo, O., to succeed George H. Adams, recently named executive vice president. For the past 25 years, Mr. Hirsch has been connected with SKF Industries, Inc. and is a member of S.A.E.

Fred C. Smith has been promoted to general sales manager of all divisions of products for the McKay Co., Pittsburgh and York, Pa. He has been with the company since 1927.

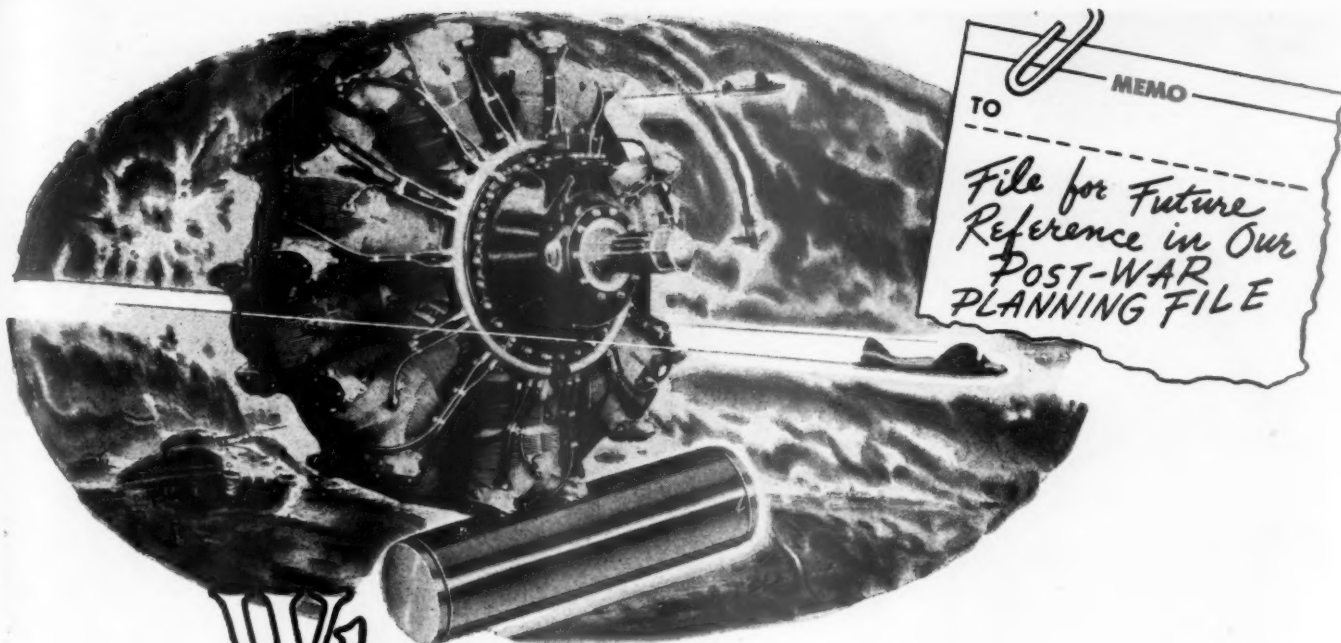
E. F. Tomlinson has been made general manager of the industrial products sales



division, The B. F. Goodrich Co., Akron, Ohio. He has been with the company since 1927.

R. L. Sullivan has been named vice president in charge of the Atlantic Division of American Can Company, New York, N. Y. Other promotions include W. J. Wardell to the position of vice president and comptroller and W. C. Stolk, vice president in charge of sales.

(Continued on page 266)



# When the War Story Can Be Told...

about Burgess-Norton's production achievements  
and developments in the manufacture of . . . . .

## PISTON PINS

of all types including aircraft with finishes to 2 micro inches . . . in the field of

## HYDROGEN COPPER BRAZING

where with the largest and latest type "controlled atmosphere" electric furnaces, copper brazed and heat-treated parts are being mass produced in one continuous operation . . . in the field of

## HEAT TREATED, SCREW MACHINE AND GROUND STEEL PARTS...NON-PRECISION BALL BEARINGS

where highest production rates are being achieved without sacrifice of quality uniformity . . .

. . . . you will discover much that will be  
to your advantage in post-war production.

*A Part is never made right  
unless it is  
satisfactory to our customers.*



1 of 7 Chicago Ordnance District winners of the Second Star for continued high production of war materials.





Chicago • Cleveland  
Detroit • Dallas  
Hartford • Houston  
Indianapolis • Los Angeles  
Memphis • Minneapolis  
Milwaukee • Montreal  
New York • Philadelphia  
Pittsburgh • Rochester  
San Francisco  
St. Louis • Toronto  
Windsor

**FEDERAL**

PRECISION MEASURING INSTRUMENTS

**PRECISION  
MAGNIFIED**

**INSTANTLY** Federal Indicator Gages tell you not only whether right or wrong... but **how much**. Tell you so clearly and positively no eye can miss.

And, Federal co-operation is so readily available you'll appreciate its suggestions for faster and better gaging.

**Tell Us Your Needs. Federal Will Meet Them.**

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Chicago • Cleveland • Detroit • Hartford • Los Angeles • Milwaukee • Montreal • Indianapolis  
New York • Philadelphia • Pittsburgh • Rochester • San Francisco • St. Louis • Toledo • Toronto • Windsor

### Dial Indicator Truism —

Gaging without Dial Indicators is like shooting without gun sights.  
Put Dial Indicators on your gages and see where you are shooting.

**FEDERAL**

(Continued from page 264)

**William R. Northlich** has been transferred from Washington, D. C. office of Owens-Corning Fiberglas Corp. to the general offices at Toledo, O., as assistant to the general sales manager.

**Harris B. Carlock** will represent H. M. Harper Co. in Tennessee, Mississippi, Alabama, Georgia, North and South Carolina. He has been a manufacturer's representative in the Southeast for 17 years.

**H. I. Lewis**, an official of the American Hardware Co., has been appointed to the newly created position of executive vice



president for the Weatherhead Co., Cleveland, O. For a new position of vice president in charge of finance, **Henry F. Bailey**, Cleveland banker, has been chosen.

**Thomas A. Knowles** has been named to a vice presidency of Goodyear Aircraft Corp., Akron, O. Mr. Knowles has been with the company since 1927 and from 1936 to 1940 was in Washington representing the interest of the Goodyear Zeppelin Corporation working on proposals for development of over-ocean airship service.

**Victor Isaacs** has been appointed general trade sales manager of Central Paint & Varnish Works, Brooklyn, N. Y.

**R. A. Williams** has been elected a vice president of American Car and Foundry Co., and will assist William L. Stanciliff



in charge of sales. He has recently been district sales manager for the company's Cleveland office and will be succeeded by Dudley L. O'Brien.

**Philip S. Hill** has been promoted to the position of assistant manager, Eastern Division, Willamette Hyster Co., Peoria, Ill. He will be succeeded as manager of the Washington, D. C. office by Frank McMillan.

# ATKINS

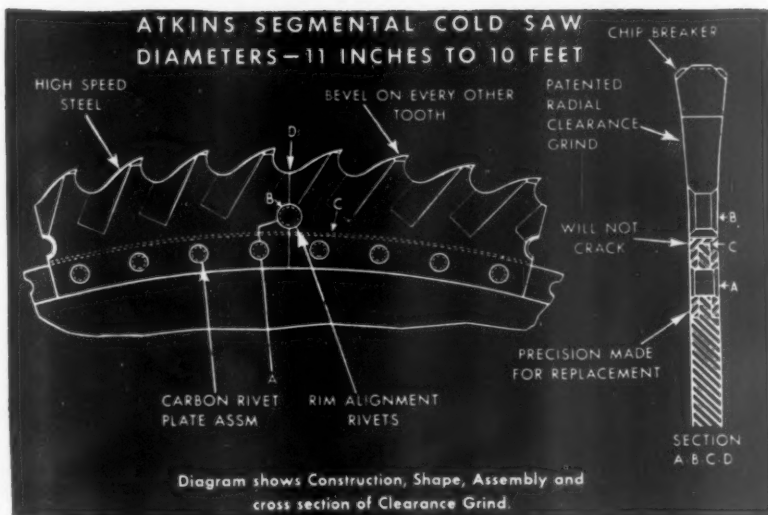
## *Curled-Chip Teeth*

*Engineered for Top Performance on*  
**YOUR TOUGHEST JOBS!**

● For heavy-duty sawing—for ingot cropping, billet sawing, bar cut-off, and other metal cutting jobs that "kill" ordinary saws—Atkins Curled-Chip Tooth design has been adapted to segmental saws. Shown is an Atkins segment, as it appears before fastening to the blade. The extra advantages of this type of segments are (1) A standard cutting width consistently narrower than other types of inserted tooth saws, (2) Economy—worn-out teeth are easily, quickly replaced without discarding the saw discs, and (3) Great resistance to the shock of heavy-duty work. These, plus the fast cutting, heavy feed rates and accurate cuts assured by Curled-Chip Teeth, make Atkins Segmental Saws your best bet for your toughest jobs. Write for Atkins Curled-Chip Manual for full details.

**E. C. ATKINS AND COMPANY**  
 406 S. Illinois Street Indianapolis 9, Indiana  
 Agents or Dealers in All Principal Cities  
 the World Over

**TOOLS ARE RIGHT!  
 TREAT WEAPONS..**





## In the Production of Magnesium, Both Amsco Alloy and Amsco Manganese Steel Have Found a Place

Multiplying by many times America's output of magnesium to meet such needs as lightweight aircraft parts and incendiary bombs has been one of industry's major accomplishments.

In the Pidgeon process of magnesium production, both Amsco Alloy and Amsco Manganese Steel are used in applications where their respective properties help make continuous operation possible. This process consists of distilling metallic magnesium in the form of vapor from briquettes made of a mixture of ferro-silicon and dolomite under low pressure in a furnace, operating at a temperature of about 2150° F.

There are usually twenty retorts to each furnace, laid side by side. After gases (principally hydrogen) have passed off, the retort is sealed and a vacuum, as nearly perfect as possible, is produced. The retort castings must, therefore, be leakproof. The vapor is condensed by a water jacketed condenser sleeve inserted prior to sealing in the open end of the re-

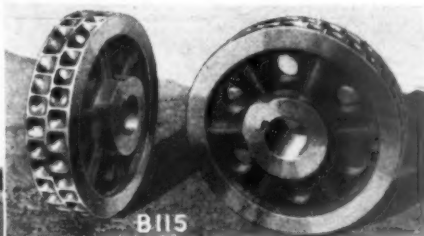
tort, crystals forming in a dense mass in the sleeve. These crystals, averaging about 15 lbs. per retort at the end of an 8-hour run, are melted and cast into pigs.

Picture R-864 shows some of the Amsco Alloy retorts employed, and in picture K-26 appears one of the many carloads of these retorts which have been shipped during the past two years to producers of magnesium by the Pidgeon process.

Amsco manganese steel also has a part in the same process, in the form of the pressure rolls shown in picture B-115, used for forming the briquettes of powdered ferro-silicon and dolomite. Here the high resistance of manganese steel to pressure loads and abrasive wear affords maximum service life.



R 864



B 115

Bulletin 108 describes the uses of Amsco Alloy in all industry; and 1041A deals specifically with heat-treating containers.



K 26

Send for Bulletin 941W on Amsco Conservation Welding Rods.

**Amsco**  
AMERICAN MANGANESE STEEL DIVISION  
Chicago Heights, Illinois

FOUNDRIES AT CHICAGO HEIGHTS, ILL.; NEW CASTLE, DEL.; DENVER, COLO.; OAKLAND, CALIF.; LOS ANGELES, CALIF.; ST. LOUIS, MO.  
OFFICES IN PRINCIPAL CITIES

AMERICAN  
**Brake Shoe**  
COMPANY

### MERIT AWARDS ARMY—NAVY—MARINE

U. S. Machine Corporation, Lebanon, Indiana. Star for Army-Navy E flag.



Picture shows Miss Betsy Ross Custer, a secretary in the Winkler Stoker service division, sewing the white star which symbolizes continued excellence of the company's war production record.

**Ilg Electric Ventilating Co.,** Chicago. Renewal of Army-Navy "E" award and addition of one star to "E" flag.

**Willard Storage Battery Co.,** Cleveland. Awarded Army-Navy "E" flag.

**The H. M. Harper Co.,** Chicago. Third Army and Navy "E" award.

**Charles H. Besley & Co.,** Chicago. Army-Navy award.

**Homestead Valve Manufacturing Co.,** Coraopolis, Pa. Awarded second gold star for Maritime "M" Pennant.

**Dodge Tool Co.,** Philadelphia. Army-Navy "E" Pennant.

**National Forge & Ordnance Co.,** Irvine, Pa. Fourth white star for Navy Ordnance "E". National Forge also has won the All-Navy "E" and the Army-Navy "E".

**Cheney Bros.,** Manchester, Conn., are flying the Army-Navy "E" flag to which a star has been added, and the Minute Man Flag.

**Burgess-Norton Mfg. Co.,** Geneva, Ill. Second star added to Army-Navy banner.

**A. F. Holden Co.,** New Haven, Conn. Army-Navy "E" star awarded to the company's two plants.

**L. F. Grammes & Sons, Inc.,** Allentown, Pa. Army-Navy "E" pennant.

**Mall Tool Co.,** Chicago. Star for Army-Navy "E" flag.

**Edwards & Co.,** Norwalk, Conn. Third Army-Navy "E" award.

**Acushnet Process Co.,** New Bedford, Mass. Third Army-Navy Production Award.

**Brown Instrument Co.,** Philadelphia. Renewal of Army-Navy "E" award.

**Cochrane Corp.,** Philadelphia. Army-Navy "E" award.

**Norris Stamping & Mfg. Co.,** Los Angeles, Calif. Special commendation for its success in producing a satisfactory

(Continued on page 270)



# TAKE **HEAVY CUTS** AT **HIGH SPEEDS** WITH **MO-MAX**

TRADE MARK REG. U.S. PAT. OFF.

## HIGH SPEED STEEL

The combination of great toughness and a high degree of hardness give **MO-MAX** superior cutting quality. This makes possible heavy cuts and the use of high speeds in a wide range of cutting operations.

Many tool manufacturers have adopted **MO-MAX** as a standard high speed steel for their most important products. If you haven't already done so, it will pay you to investigate this steel which has revolutionized the high speed steel industry.

For technical details and available stocks, contact any of the steel producers listed below.

Revised technical data book almost ready. Completely covers application and use of **MO-MAX** High Speed Steel. Address The Cleveland Twist Drill Co., 1242 East 49th St., Cleveland 14, Ohio.

THE  
MOLYBDENUM-TUNGSTEN  
HIGH SPEED STEELS  
MARKETED UNDER THE  
GENERAL TRADE NAME  
**MO-MAX**

BY J. V. BARNES, METALLURGIST FOR  
THE CLEVELAND TWIST DRILL CO.

"LMW"	Allegheny Ludlum Steel Co.	"Molite 8"	Columbia Tool Steel Company	"Tatmo"	Latrobe Electric Steel Co.
"Mohican"	Atlas Steels, Ltd.	"Rex-T-Mo"	Crucible Steel Co. of America	"S. T. M."	Simonds Saw and Steel Co.
"Bethlehem HM"	Bethlehem Steel Company	"Di-Mol"	Henry Disston & Sons, Inc.	"Mo-Tung"	Universal-Cyclops Steel Corp.
"Mo-Cut"	Braeburn Alloy Steel Corp.	"Rex-T-Mo"	Holcomb Steel Co.	"Vul-Mo"	Vulcan Crucible Steel Co.
"Star Max"	Carpenter Steel Co.	"Mogul"	Jessop Steel Company		



**Send for this  
FREE  
CHART**

**Decimal Equivalents.** Accurate to four places. Signaled in three colors for maximum speed in locating decimal equivalent of fraction. Saves time and avoids errors. Yours at no cost or obligation. Just send us your name, title and address.

**JOHN HASSALL, INC.**  
Specialists in Cold-Forging Since 1850  
404 Oakland Street • Brooklyn 22, N.Y.




**"COIL SPRING" says  
"I'm Ready To Go! Ready To  
Spring Up Your Production!"**

**P. S. I'M MADE BY THE  
U. S. STEEL WIRE SPRING  
COMPANY.**

Springs are no problem to the users of U. S. Steel Wire Spring Co. products. They're engineered to be trouble-free and made of the best materials to eliminate flaws. Production demands make quick installation of springs essential. Our springs are designed for this purpose.

**If you want the best, in a hurry—call us!**

**THE U. S. STEEL WIRE SPRING CO.**  
7800 FINNEY AVE. • MICHIGAN 6318 • CLEVELAND

(Continued from page 268)

heat-treated steel cartridge case for 3-in. anti-aircraft and 3-in. anti-tank guns.

**York Corporation**, York, Pa. Awarded "P" flag symbolizing superior plant protection.

**Greenfield Tap & Die Corp.**, Greenfield, Mass. Third Army-Navy award, which entitles company to carry two stars on "E" pennant.

**Whiting Corp.**, Harvey, Ill. White Star for Army-Navy "E" burgee.

**Weatherhead Co.**, Cleveland, Ohio. Star for Army-Navy "E" flag.

**Acme Steel Company**, Chicago. Army Ordnance Banner.

**F. W. Wakefield Brass Co.**, Vermilion, Ohio. Star for Army-Navy "E" flag.

**International Industries, Inc.**, Ann Arbor, Mich. Star for Army-Navy "E" flag.

**Charles T. Brandt, Inc.**, Baltimore, Md. Third star for Army-Navy "E" pennant. The company was among the first of 150 firms in the nation to receive the Army-Navy pennant.

**Western Automatic Machine Screw Co.**, Elyria, Ohio. War production citation from the Ordnance Department Industry Integration Committee for Tank Tractors, "for outstanding engineering contribution and a unusual efficiency of production."

**Manhattan Rubber Mfg. Division** of Raybestos-Manhattan, Inc., Passaic, N.J. Army-Navy "E" award, while observing its golden anniversary. The company was first to receive a Treasury "T" flag for bond sales in the Passaic area, first in the industrial scrap campaign and first to receive the Army-Navy "E" in the Passaic area.

**NORTH AMERICAN PHILIPS CO.  
ACQUIRES PHILIPS METALIX COR.**

North American Philips Co., Inc., Dobbs Ferry, N. Y., announces the purchase of all fixed and tangible assets of its affiliate, Philips Metalix Corp., including grounds and factory at 896 So. Columbus Ave., Mount Vernon, N. Y. The business will continue as the Metalix Division of North American Philips Co., Inc.

**AMERICAN CHAIN & CABLE  
ACQUIRES MD. BOLT & NUT**

The Maryland Bolt & Nut Company, Mt. Washington, Baltimore, Md., was recently acquired by American Chain & Cable Co., Inc., Bridgeport, Conn. Operations will be continued at the Baltimore plant as heretofore and no changes in policies or personnel are contemplated.

**ORGANIZED AS BURGESS BATTERY  
COMPANY SUBSIDIARY**

Burgess-Manning Company was recently incorporated as a subsidiary of Burgess Battery Company, assuming the activities of the Acoustic Division of Burgess Battery Company. The newly elected officers are W. L. Manning,

(Continued on page 274)





## When much *depends on one*

Even in those first tense moments of locating the enemy, the scout's keen eyes are observing every movement, his trained mind interpreting the action for his headquarters. Much depends on him . . . his report is a key piece in the complicated jigsaw of a large-scale military operation.

Much depends on Columbia chemicals, too, in their vital role in so many manufacturing operations. Uninterrupted, economical production and the characteristics desired in finished products are dependent on chemicals that conform to specifications.

This is why Columbia has established the highest standards for its products. This is why Columbia can assure the supplying of chemicals which meet the precise needs of its customers.

# COLUMBIA CHEMICALS



PITTSBURGH PLATE GLASS COMPANY  
COLUMBIA CHEMICAL DIVISION

GRANT BUILDING, PITTSBURGH 19, PENNSYLVANIA

Chicago • • • Boston • • • St. Louis • • • Pittsburgh • • • New York • • • Cincinnati  
Cleveland • • • Minneapolis • • • Philadelphia • • • Charlotte

## COLUMBIA SPOTLIGHT

DO YOU HAVE NEW PRODUCTS which you believe will interest us? One of the important members of our Purchasing Staff is a chemical engineer who directs the testing of new materials and who sees that new ideas are thoroughly investigated. If you have new products or services of the type we might use, bring them to the attention of our Purchasing Engineer, Barberton, Ohio. Full consideration is assured.



GEOLOGISTS WHO ESTIMATED the depth of the salt bed which serves the DPC Chlorine-Caustic Soda plant operated by Columbia at Natrium, West Virginia, are certainly entitled to take a bow. Although deepest in the world in commercial use (6,720 feet), the well sunk for this operation was within 35 feet of the geologists' estimate—a miss of only  $\frac{1}{2}$  of 1%!



THE GLASS INDUSTRY'S NEED for standardized grades of Dense Soda Ash was first recognized and served by Columbia. For best results, the granulation and density of the Soda Ash must bear the proper relationship to other batch ingredients—it is not enough that it merely be granular, dense and dustless. Columbia perfected three standard grades from which the glass maker selects the proper density and grain size for better manufacturing performance and superior glass products.



A STRIKING EXAMPLE of the growth of the chemical industry is found in the production records of Caustic Soda. In 1899—the year of Columbia's organization—total U. S. production of this chemical was 167,000 tons. By 1941—before the impetus of our nation's war needs—the chemical industry itself was consuming 220,000 tons of the total national production of 1,095,000 tons, and Columbia's Caustic Soda output alone exceeded the total 1899 production by a substantial margin!

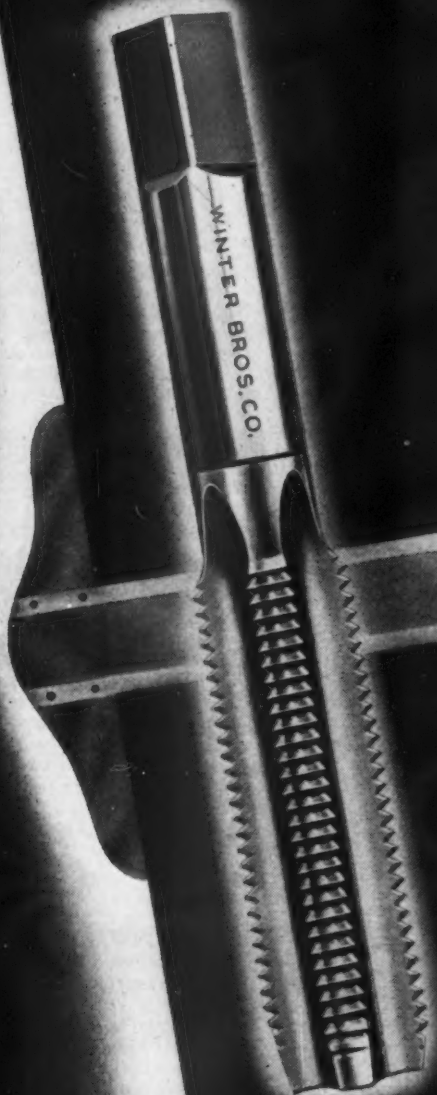


COLUMBIA CHEMICALS include Soda Ash, Caustic Soda, Sodium Bicarbonate, Liquid Chlorine, Silene EF (Hydrated Calcium Silicate), Calcium Chloride, Soda Briquettes, Modified Sodas, Caustic Ash, Phosflake, Calcene (Precipitated Calcium Carbonate), and Calcium Hypochlorite.



# "SQUARES UP"

WITH EVERY TAPPING JOB



And — standing squarely behind every WINTER TAP is an organization which directs the skill of its workers toward the production of one product — threading tools — made as fine as ingenuity and modern machinery can turn them out.

Winter Engineers can help you in selecting the proper tap for any particular threading job. Their specialty is threading problems.

*A division of*

**The NATIONAL TWIST DRILL & TOOL CO.**  
Detroit, Michigan

# Winter Brothers

COMPANY

BRANCH STORES:

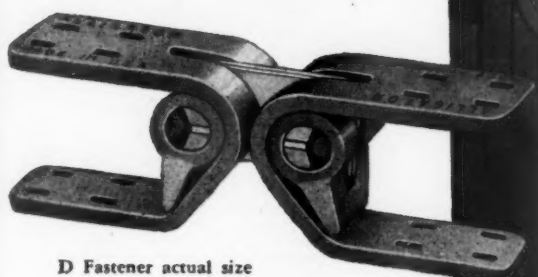


**Wrentham, Massachusetts, U.S.A.**

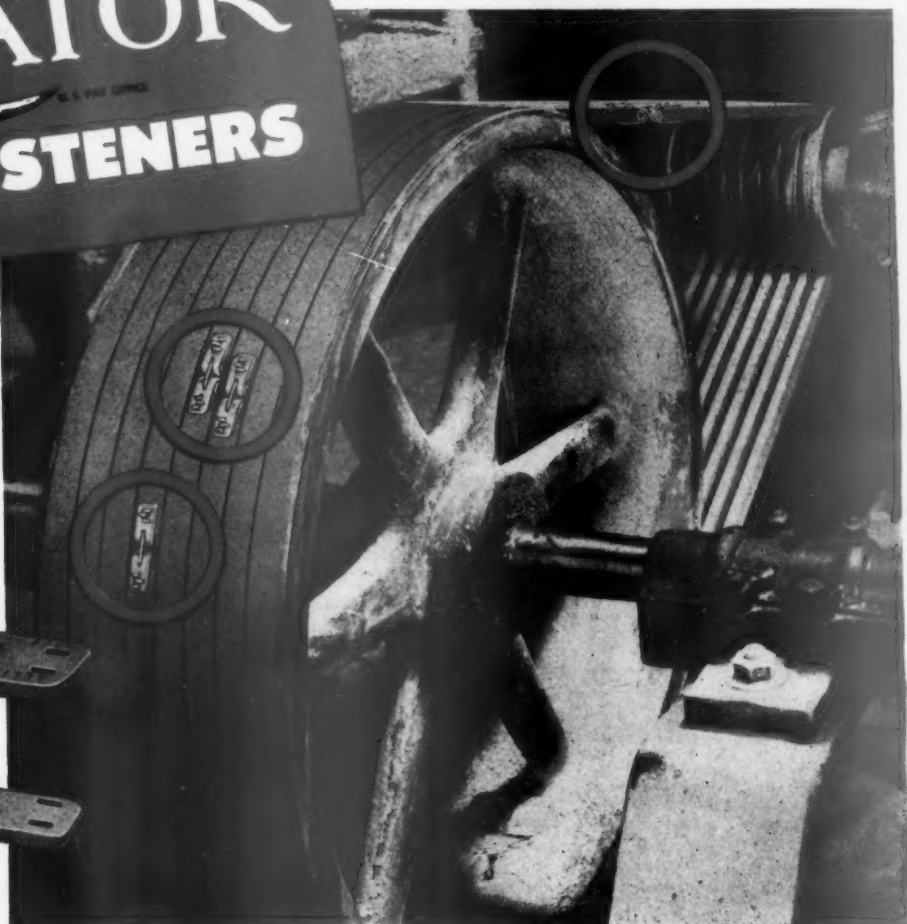
SAN FRANCISCO, CALIFORNIA · CHICAGO, ILLINOIS · DETROIT, MICHIGAN

# ALLIGATOR V-BELT FASTENERS

**—widen field  
of application  
for V-Belts**



D Fastener actual size



Close coupled drives to shafting of the type shown below are now made possible through the use of Alligator V-belt fasteners and fabric core V-belt. These fasteners are, however, not for application to endless cord V-belts.

**W**ITH the rapidly increasing use of V-belts and the constantly widening field for applications of these belts there has come an insistent demand for a fastened V-belt.

To meet this demand, belting manufacturers have put on the market leather V-belts and specially constructed fabric V-belts. The Flexible Steel Lacing Company, as its part of the program, developed the Alligator V-belt fastener.

With the Alligator V-belt fastener and the specially constructed V-belt, it is convenient and economical to install and maintain matched multiple lengths of V-belts on drives without the necessity of dismantling expensive installations. It is also possible to make up a wide variety of multiple V-belt drives from roll belting. Only one fastener is needed on each belt but if some odd lengths of belting are on hand, they can be used by joining them with several fasteners.

During the nine years these fasteners have been on the market they have established a remarkably fine performance record on a wide variety of drives. You can therefore use these fasteners on your V-belt drives with assurance as to their successful operation.

The fasteners are available for B, C and D sizes of belt for industrial use and 1-in. and 2-in. sizes for railroad use. Complete details are covered in the bulletin described below and if you are not familiar with this latest development in belt fastening practices we suggest you write for a copy.

**COMPLETE DETAILS** are covered in Bulletin V-205 which covers both industrial and railway applications of Alligator V-belt Fasteners. Shows where and how they are used with sizes, list prices, tools and other details.

A copy will be mailed at your request



**Order from Your Supply House**

**FLEXIBLE STEEL LACING CO.**  
4697 Lexington St., Chicago 44, Illinois

Sole manufacturers of Alligator Steel Belt Lacing for flat transmission belts • Flexco MD Belt Fasteners for conveyor belts • Alligator V-belt Fasteners for open end V-belt.

# Here Comes the Hot Coffee!



## Welcome! You can say that again

There just is no other way to service hot coffee to your workers indoors, outdoors, day shift or night shift, that will match the low cost efficiency of hot coffee service with "Aer-Void" Vacuum Insulated Coffee Carriers.

And is hot coffee appreciated by factory workers? You wouldn't ask the question if you had ever tried it. Just stop and reflect that it takes 91,300,000,000 cups of coffee per year, according to official figures, to satisfy America's coffee-craving, and you have the answer. No other beverage can point to such a pronounced public preference.

No, the "pin-up" girl in our plant is not Betty Grable, not Rosalind Russell, not Deanna Durbin, but the girl in the immaculate white uniform that shows up mid-morning and mid-afternoon with a delicious cup of hot coffee for everybody . . . office and shop. Hundreds of industrial War plants already have "Aer-Void" hot coffee service combating fatigue-lag in their workers. Cold days emphasize the need for this low-cost morale-builder.

Write for price list No. 145

FOOD SERVICE & CONSERVATION DEPT.  
**VACUUM CAN COMPANY**  
25 S. HOYNE AVE. - CHICAGO 12, ILL.

**"AerVoid"**  
VACUUM INSULATED CARRIERS  
FOR STORING, TRANSPORTING  
AND SERVING **HOT COFFEE**

(Continued from page 270)

president; D. W. Day and R. L. Leadbetter, vice presidents; J. E. Lutz, treasurer; H. H. Darbo, secretary; E. D. Woisard, assistant treasurer and assistant secretary. Offices are located at 2815 West Roscoe St., Chicago 18, Ill. The transfer involves no change in either personnel or policy.

### ENLARGED NEW YORK OFFICE FOR H. K. PORTER CO.

The opening of an enlarged New York and export office at 50 Church St., New York, N. Y., made necessary to accommodate rapid expansion of its business, has been announced by H. K. Porter Company, Inc., Pittsburgh, Pa. The new office will serve as an Eastern center for the company's entire line of locomotives, process equipment and pumps.

Thomas Mac Lachlan has been named general manager in charge, and is also directly handling locomotive sales and service for the entire Eastern seaboard.

R. G. Newell, who managed the New York office of Quimby Pump Co. before its acquisition by Porter, is directing activities of Porter's Quimby Pump Division in New England and the New York district, from the new office. Earl M. Bardo, formerly with Robinson Manufacturing Co., is headquartered in the same office, representing Porter chemical process equipment for the same territory. The company's export department also has been housed at 50 Church Street.

### NEW SYLVANIA PLANT AT DOVER, N. H.

Sylvania Electric Products, Inc., Ipswich, Mass., has established an additional manufacturing unit at Dover, N. H., occupying about 250,000 square feet of space in two mills formerly owned by the Pacific Mills.

### TURCO OPENS FACTORY AT HOUSTON

Turco Products, Inc., of Los Angeles, Calif. and Chicago, Ill., manufacturers of specialized industrial chemical compounds, has opened a new plant at Houston, Tex., to serve the Southwest. The firm manufactures more than 225 specialized compounds. Vachel Poole is district manager at Houston.

### DECIMAL EQUIVALENT CHART CALENDARS

The Dayton Rogers Manufacturing Co., 2835 12th Ave. South, Minneapolis, 7, Minn., announces that it has for free distribution, two sizes of Decimal Equivalent Chart Calendars, one 7" x 15", and the other 13" x 27". They may be had upon request upon company letterheads.

### ALLIS CHALMERS PUBLISHES NEW MAGAZINE

"Allis-Chalmers Operation and Maintenance Review" is a new pocket-sized (Continued on page 276)

## Why FIT is important for Machine Screws and Stove Bolts



1. Efficient assembly into the tapped hole
2. Standard thread sizes and clean threads to fit standard nuts
3. Deep burr-free slotted heads to fit standard hand and power tools
4. Standard dimensions of every type of head

MADE by the million, machine screws and stove bolts do important fastening jobs in a wide range of uses. Such applications depend for their economy, appearance and permanence on the *fitting* quality of machine screws and stove bolts.

General Screw Manufacturing Company products are specified throughout industry by Purchasing Agents aware of this fact: *Products that fit the job are easier and cheaper to use.*

General Screw Manufacturing Company Products Include: Machine Screws and Stove Bolts; Machine Screw Nuts, Carriage and Machine Bolts; Cap Screws; Cold Punched and Hot Pressed Nuts—Standard and Special.

## GENERAL SCREW Manufacturing Company

1238 W. Monroe St., Chicago 7, Ill., U. S. A.





# CLOCKS TO CARTRIDGES

Clocks were but one of hundreds of consumer and industrial products into which Western Brass flowed to serve a world at peace. Now—serving the United Nations in their drive to *restore* peace—Western Brass and other copper alloy metals are pouring into war industries in tremendous quantities from our mills at East Alton, Ill., and New Haven, Conn. . . . If you are making post-war plans, we will welcome the opportunity to assist you.



*Western* **BRASS MILLS**

*Division of WESTERN CARTRIDGE COMPANY, East Alton, Ill.*

BRASS • BRONZE • PHOSPHOR BRONZE • NICKEL SILVER • COPPER

# "Take it away" with CM HERC=ALLOY SLING CHAIN

Every Inswell electric-welded link in this CM Herc-Alloy steel chain personifies safety and lifting strength. From the white hot ingots in the nation's steel mills to the finished structural girders for our skyscrapers, CM Herc-Alloy Sling Chains have been doing a handling job that ranks them "tops" in industry... "tops" in dollar value, service life, maximum safety or any other yardstick of measuring.

Ask your mill supply distributor about the particular CM Herc-Alloy Sling Chain for your job and learn first hand the reasons why the top names in American industry have been using them for years.

HERC-ALLOY LINK  
SHOWING PATENTED  
INSWELL WELD

## COLUMBUS=McKINNON CHAIN CORPORATION

(Affiliated with Chisholm-Moore Hoist Corporation)

GENERAL OFFICES AND FACTORIES: 136 Fremont Ave., TONAWANDA, N. Y.  
SALES OFFICES: New York, Chicago and Cleveland

(Continued from page 274)  
magazine succeeding Allis-Chalmers' "Victory Production and Maintenance News."

Illustrated with eye-catching color cartoons, the publication aims to broaden interest in problems of wartime maintenance. It contains maintenance tips from Allis-Chalmers engineers, as well as timely articles on current trends for the shopman and the executive. It also invites an exchange of ideas on operation and maintenance from equipment users. The "Review" will be issued bi-monthly.

1 1 1

### AIR EXPRESS SHIPPING ESTIMATOR

Illustration shows new Air Express Shipping Estimator now being distributed by Air Express Division, Railway



Express Agency, 230 Park Ave., New York 17, N. Y. Operating on the slide rule principle, the estimator meets recent rate reductions. It gives approximate charge for domestic air express shipments from 1 to 1,000 pounds for various distances which are easily determined on map on reverse side.

1 1 1

### YOST SUPERIOR BUYS FACTORIES BUILDING

Arrangements for the purchase of the Shuey Building, Springfield, O., by the Yost Superior Co., under B. F. Downey, secretary-treasurer and general manager, and the Airetool Manufacturing Co., of that city, were recently completed. The building will be rearranged to provide additional space for the manufacturing needs of the two companies.

1 1 1

### FORTY YEARS OF SERVICE

The history of the Continental Rubber Works, Erie, Pa., since its founding in 1903 by Theron R. Palmer, who is now the president of the company, is interestingly told in an illustrated 30-page brochure, written and designed by the secretary of the company, C. J. Palmer. Previous to forming the Continental Rubber Works President Palmer began his rubber career with the B. F. Goodrich Company, later becoming works manager for the Pennsylvania Rubber Co. in Erie. He supervised the building of a new plant for the latter company in Jeannette, Pa. In 1903 when his own company was organized, the plant of the American Bicycle Company in Erie was acquired. Production was started on the "proverbial Friday" despite the feelings of stockholders who felt it might be "unlucky", and "from that day on the company has operated on a 24-hour basis".

# SOWING SEEDS OF SUDDEN DEATH

## THAT RIPEN AT A TOUCH

**L**AND mines are no more deadly than so many turnips if the springs that set them off are faulty.

Uncle Sam wasn't fooling when he set the stiff requirements that springs for these lethal surprise packages must live up to. It takes spring engineering of the highest order to meet specifications such as these.

But our spring specialists have licked this problem—and dozens like it. A great deal of the research done in our spring laboratories and shops is aimed solely at insuring unfailing performance of springs of every kind, under every sort of condition, for every kind of war equipment.

***The time to think about  
the future is now***

The specialized knowledge of springs that our engineers can bring to your problems is freely at your service.

The things we have learned in these war years about making springs better—how to turn them out faster, in greater quantities and from new and better made-in-America steels—are available to make your springs for peacetime service superior both in quality and performance. We welcome the opportunity to work with your engineers and designers.



**AMERICAN STEEL & WIRE COMPANY**

*Cleveland, Chicago and New York*

*Columbia Steel Company, San Francisco, Pacific Coast Distributors*

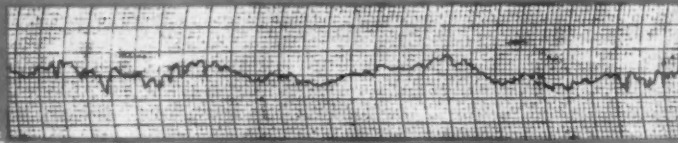
*United States Steel Export Company, New York*

*U.S.S.  
American Quality  
Springs*

**UNITED STATES STEEL**



# Proof of a Better Finish



## Surface Analyzer Tapes Show You Get A Better Finish With Chicago Wheels

These results were obtained at a rate of 10 pieces per hour in an aircraft parts plant. Material, X-13-15, Rockwell 60 to 57, grinds out .006 to .007 stock. Chicago Wheel used,  $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{8}$ ", Grain 180, Grade L Arcite. Spindle Speed 40,000 r.p.m. Lapping and super finishing eliminated on this job.

Can you match that finish? Sounds phenomenal, but you can do the same thing with Chicago Wheels.

Squint your eye along the surface, test it by "feel" or be scientific and use a surface analyzer to measure your finish in micro inches—you'll find that Chicago Wheels give you better finishes, hold closer tolerances and have longer life. They're mighty fast, too; are often spoken of as "bottleneck busters."

One of the secrets behind Chicago Wheels' superiority is the exclusive bond formula developed, as a result of 50 years' experience making grinding wheels.

### Now Featuring Wheels Up to 3" in Diameter

For the duration, with full WPB approval, we are specializing on the small sizes—anything up to 3" in diameter.

Write for Catalog and we will include Engineering Survey Forms helpful in getting the right solution to your own grinding problems.

**CHICAGO WHEEL & MFG. CO.**  
America's Headquarters for Mounted Wheels and Small Grinding Wheels  
1101 W. Monroe St., Dept. P6,  
Chicago 7, Ill.

**NO PRIORITIES NOW  
REQUIRED IN U. S. A.  
ON CHICAGO WHEELS**



Half a Century of Specialization has Established our Reputation as the Small Wheel People of the Industry.



Send Catalog and Survey Forms. Interested in  
( ) Mounted Wheels, ( ) Grinding Wheels.

Name .....

Address .....

PG-3

## RYERSON BUYS BETHLEHEM PITTSBURGH WAREHOUSE

Announcement by Joseph T. Ryerson & Son, Inc., states they have purchased from the Bethlehem Steel Company their Pittsburgh steel warehouse plant. The property consists of a large modern warehouse building, containing 150,000 square feet on an industrial site of several acres. The building is equipped with cranes and will readily lend itself to future improvement and expansion.

It is located in Carnegie, Pennsylvania, adjacent to Pittsburgh, and well situated for distribution in the Pittsburgh industrial area, as well as for trucking and freight service throughout the territory normally served by Pittsburgh distributors.

Due to limited office facilities at the plant, Ryerson has opened a sales office in the Grant Building, 330 Grant St., Pittsburgh 19, Pennsylvania.

Included in the purchase is the Bethlehem stock of bars, shapes, plates and sheets. It is the Ryerson plan to augment this stock and plant facilities as soon as conditions permit, making available a full line of steel products as provided by the other ten Ryerson plants.

Mr. Howard L. Robinson of the Ryerson Cleveland organization, who has served in the Pittsburgh territory for some time, will be located in the Grant Building as the Ryerson Pittsburgh representative. Mr. W. W. Kopf of the Ryerson Philadelphia plant, will be located at the plant office in Carnegie.

## HOMOGENEOUS FIBER WALLBOARD COMMERCIAL STANDARD

Commercial Standard CS112 - 43, Homogeneous Fiber Wallboard, is now available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. in pamphlet form. Price 5 cents.

1 1 1

## Standardization of Electric Apparatus

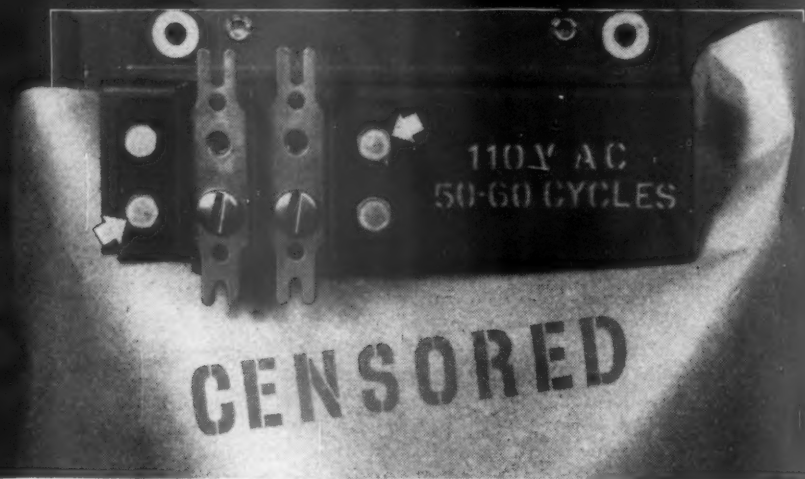
(Continued from page 95)

tical-lift metal-clad equipment for medium voltage service also began around 1928. At that time approximately 360 different types and ratings of oil circuit breakers were used for circuit protection and switching in the 2300 volt to 15000 volt range. The housings or mountings furnished were special and the number of varieties ran into thousands.

By 1935, the merits of metal-clad construction had become recognized. A "master" type, totally enclosed, factory-assembled unit, including a breaker and its associated current transformers, disconnecting devices, bus and connections all assembled in

(Continued on page 280)

# YOU CAN LEARN PLENTY FROM THIS MILITARY SECRET!



Read how assembly was simplified to get speed...with security

The "inside story" of this war-essential electronics apparatus cannot be revealed because it would aid the enemy. But, there's no secret about the method used by the maker to avoid assembly difficulties, and get fastening speed with security.

Twenty-eight metal and plastic assemblies are made with P-K Self-tapping Screws. Only one easy operation is required . . . the Screws are driven into plain, untapped holes.

The maker, The Langevin Co., New York, says: "If P-K Self-tapping Screws weren't available, we'd have to tap holes for machine screws, or use nuts and bolts. Both methods present serious problems. To tap properly, both parts would have to be aligned within close limits . . . a tough, expensive job. With P-K Screws, we can allow much more tolerance in alignment."

"Since we cannot reach inside to run on nuts, complete re-design of the unit would be necessary to use bolts."

## Try this *SIMPLER* Method...

No matter what metal or plastic you use, try the simple, Self-tapping Screw method. In 7 out of 10 cases you'll find you can eliminate tapping, and fumbling with bolts and nuts; do away with inserts in plastics, or cut out riveting or welding in hard-to-reach places.

Call in a P-K Assembly Engineer to check over your fastening jobs with you. Or, mail assembly details for recommendations. Parker-Kalon Corporation, 202-204 Varick Street, New York 14, New York.

## SOLVED...Five Metal and Plastic Fastening Problems



HEX

**1** Six P-K Hex Head Self-tapping Cap Screws fasten plastic terminal board to transformer and bell.



Z

**2** Four P-K Hex Head Cap Screws attach plastic terminal plug to metal bracket. On opposite end (not shown) four P-K Type "Z" Screws make similar fastening.



U

**3** Four P-K Hex Head Cap Screws fasten two canvas-backed plastic resistor strips to a metal bracket inside same part.

**4** Eight P-K Type "Z" Screws fasten two canvas-backed plastic resistor strips to 22 gauge metal brackets on amplifier chassis.

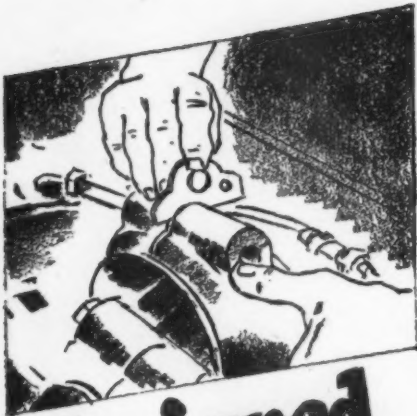
**5** Two P-K Type "U" Drive Screws fasten nameplate to the product.



SELF-TAPPING SCREWS FOR EVERY METAL AND PLASTIC ASSEMBLY

**PARKER-KALON**  
*Quality-Controlled*  
**SELF-TAPPING SCREWS**





**designed  
for  
time saving**



Quick-precision shimming with Laminum often cuts assembly time 20 to 30%. Is introduced without fuss ... also eases shop, maintenance and service routine.

Shims cut to your specifications. Stock shim materials obtainable from your dealer. Write us for further information and shim application chart.

Laminated Shim Company  
Incorporated  
90 Union Street • Glenbrook, Conn.

**LAMINUM**  
THE SOLID SHIM THAT *peels* FOR ADJUSTMENT

2044

## Standardization of Electric Apparatus

(Continued from page 278)

a compact steel housing, was offered at a price competitive with open-type switchgear. Further price reductions were made in 1939 and again in 1942, so that today a vastly superior metal-clad equipment is being produced and sold at a price about 35% below that of 1935.

### Advantages of Standardization

It seems natural that customer interest in standardization has been stimulated chiefly by the prospect of lower prices through repetitive manufacture. It is true that manufacturers have found it possible to offer price inducements on selected popular ratings and designs. The amount of price differential varies. It has been as little as 2 or 3% in cases where very few duplicates are built, and it may be in the order of 20 or 30% or more in cases where nearly all purchases can be channeled into relatively few ratings or combinations of standard devices, so that true mass repetitive manufacturing methods can be employed.

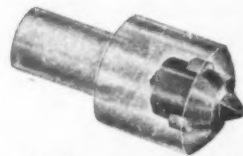
Obviously, if the same facilities must be used for the production of both standard and special apparatus, the possible saving in cost is limited. If as little as 20 or 25% of the output is special, the cost of producing these specials becomes very high relatively. To date, each manufacturer has selected ratings which he considers as standard, based on his own experience and judgment. These ratings have not always reflected the true requirements of the users generally. What is standard for one manufacturer is likely to be special for another. To be competitive, all manufacturers have, therefore, been forced to price their specials at levels not much higher than the standards, regardless of their higher costs. As a result, a portion of the excess cost of the specials has been borne by the standard items, and it has not been possible to pass on to the user the full benefits of the savings which accrue from repetitive manufacture. It seems to me that this is wrong. If the utility industry and the electric equipment manufacturers can work together in es-

(Continued on page 282)

**ATTENTION:** Do you need an experienced man in your Purchasing Department? Thoroughly familiar with organizing, methods, and procedure. At present engaged as buyer and expeditor. Available immediately. Honest and capable. College education, 15 years business experience, 40 years old, married, 3 children. Draft status 3A (H). Write Box #954 PURCHASING, 205 East 42 St., New York, 17, N. Y.

## DIAMONDS for Victory

BIG - HED - NIBS  
LOC - KEY - SET  
RE - SET - ABLE



Cooler dressing  
Closer tolerances  
Micrometer  
Accuracy

Because: Wing key  
heat dissipation  
and absolute dia-  
mond lock nib.

● Three grades of diamonds. Common quality \$12 per karat. Medium quality \$24 per karat. Select quality \$48 per karat. (Contour template diamonds supplied only in Medium and Select quality.)

All diamond sizes  $\frac{1}{4}$  to 10 karat are nib mounted for immediate shipment . . . Billed subject to approval. Specify quality of diamond wanted. We recommend a minimum size of one karat for each 6" diameter of grinding wheel. (24 hour resetting service, \$1.00 post paid.)

Grinders instruction card free.

The Most Complete and Up-to-the-Minute Line of Diamond Tools for War Production. Send for Free Catalog.

Distributed through Mill Supply Jobbers.

DIAMOND TOOL COMPANY, Not Inc.  
Sheldon M. Booth, Pres.  
938 E. 41st Street CHICAGO, ILL.

## FOR BETTER ELECTRICAL INSULATION SPECIFY IRVINGTON TUBINGS

**IRV-O-VOLT:** Braided cotton tubing, varnished inside and out for double protection.

**IRV-O-LITE:** Extruded plastic tubing; XTE-30 for general use, XTE-130 to resist higher temperatures.

**TRANSFLEX:** A transparent plastic tubing that resists sub-zero temperatures.

**HYFLEX:** Similar to Transflex but obtainable in six opaque colors.

**IVI-FLEX:** A highly flexible plastic tubing for use at temperatures as low as  $-80^{\circ}$  F.

**PLASTIC MARKER INSULATORS:** Short lengths of tubing to identify and insulate wire terminals; marked to specifications.

### OTHER INSULATIONS

Varnished Cambric, Alternates for Varnished Silk, Varnished Papers, IRV-O-SLOT INSULATION, HARVEL and IRVINGTON Insulating Varnishes.

### IRVINGTON VARNISH & INSULATOR CO.

Irvington 11, New Jersey, U. S. A.  
Plants at Irvington, N. J. & Hamilton, Ontario, Canada  
Representatives in 20 principal cities



5298



*For example—***Resistance Welding**

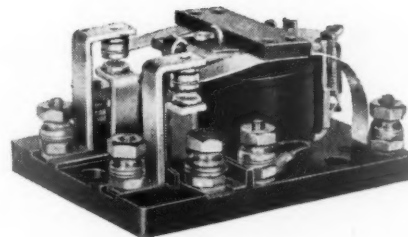
Thyatron tubes, working with other thyatron or ignitron tubes and usually a relay, control the current for spot, projection, seam and other types of resistance welding for lower maintenance and better welds.

THERE'S A JOB FOR

*Relays* BY GUARDIAN

Your post-war product must stand the competition of price as well as quality. And manufacturers who use electron tubes to boost production, cut material costs, and increase product performance, have the edge on competitors. Electronic control of resistance welding is one cost-saver to consider.

In this, as in most other tube applications, the use of a relay increases efficiency. The Series 175 DC and Series 170 AC Relays by Guardian, when used in the output of the tube circuit, control external loads in accordance with the tube operating cycle. These relays have binding post terminals in place of solder lugs. Bakelite bases, molded to reduce surface leakage, give a higher breakdown factor. Contact capacity: 12½ amps., at 110 volts, 60 cycles, non-inductive. Information on contact combinations, coil voltages, and further data is yours for the asking.



Consult Guardian wherever a tube is used. However, Relays by Guardian are NOT limited to tube applications but may be used wherever automatic control is desired for making, breaking, or changing the characteristics of electrical circuits.

**GUARDIAN**  **ELECTRIC**

1635-C W. WALNUT STREET

CHICAGO 12, ILLINOIS

A COMPLETE LINE OF RELAYS SERVING AMERICAN WAR INDUSTRY

# protectioneering

## IS OUR JOB!

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1944

Just as Purchasing is Yours

PREPARE TO SEE YOUR  
MAINTENANCE SUPERINTENDENT

*faint*

when you tell him you can supply his wants on

**ALUMINUM PAINTS . . . . .**  
(For War Industries)

**TOTALUME** — heat-resistant, rust-inhibiting aluminum . . . or Light Gray — penetrating rust-inhibitive, closely resembling aluminum color.

**QUALITY SYNTHETIC ENAMELS**  
(QUICK DRY)

**TOTRUST ENAMEL Heavy Duty** — for extreme resistance to weathering or abrasion. . . . Safely used on damp or rusted metal.

**SHELLAC SUBSTITUTE . . .**

**STAINCURE** — for sealing bleeding stains and for sizing porous surfaces. . . . Dries in ten minutes.

**RUST PREVENTIVE METAL PAINTS**

**TOTRUST** — the penetrating, rust-preventive paint, safely used on damp or rusted metal without costly surface preparation.

**NON-YELLOWING WHITE OIL PAINTS**

**BONDLITE (Flat) or DAMPCOAT ENAMEL (Gloss)** — maintains whiteness because based on non-yellowing oils.

**PENETRATING CONCRETE FLOOR PAINTS**

**DYE-CRETE** — carries color deep into concrete, becoming part of the floor and giving stonelike hardness. Resists dampness, alcohol, gasoline, and many chemicals.

**ACID AND CAUSTIC RESISTING PAINTS**

**ACIDBOND and CAUSTIC-BOND.** Write for recommendations on special problems.

**WILBUR & WILLIAMS** products possess special penetrative properties; they remain elastic without cracking, peeling or checking; do not shrink. There's nothing like them at any price.

Write for the name of the nearest Protectioneer or for full technical information covering any or all of the above named products.

*The*  
**WILBUR & WILLIAMS**  
COMPANY

Dept. 53  
Park Sq. Building  
Boston 16, Massachusetts

## Standardization of Electric Apparatus

(Continued from page 280)

establishing standards which the utilities will willingly purchase in preference to the specials, whenever the standard item will meet the requirements, we feel sure that the price differential in favor of standard equipment can be increased materially.

It should be recognized that lower equipment price is not the only advantage to be obtained from standardization. The manufacturer of standard apparatus can generally produce the complete equipment or component parts in anticipation of receipt of orders. Shorter shipment is, therefore, possible, delays due to failure in production are reduced, and a more uniform factory load is obtained. Also, the purchaser finds that complete information on the product is more readily available, and the preparation of specifications and placing of orders is simplified. Dimensions and outlines can be obtained quickly and installation time and money are usually saved through purchase of package equipment. If the power system is designed around standard equipment, greater flexibility is obtained as more and more standards are installed. Standard apparatus can be moved from one location to another as load requirements shift or grow. Fewer renewal and replacement stocks are needed because the same parts are applicable to many equipments. Many of the more popular ratings of standard apparatus will be available from manufacturers' stock, reducing the inventory requirements of individual purchasers.

### Cooperation is Needed

This is a cooperative job. It can't be done by one manufacturer, or even by all manufacturers working together. The utility industry and the electric equipment manufacturing industry must work together. The manufacturers must then:

(1) Alter their designs and manufacturing methods, when necessary, in order to take full advantage of the concentration of production in the standard ratings and to employ as many interchangeable parts as possible.

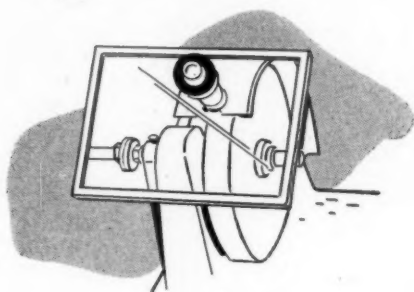
(2) Price in such a way that standards are given the full benefit of the manufacturing economies obtained, and specials bear the proper extra price proportional to their higher cost.

(3) Concentrate their engineering  
(Continued on page 284)

45 PROTECTIONEERS and OVER 800 STOCKING DISTRIBUTORS FROM COAST TO COAST

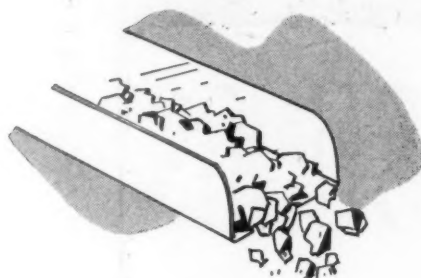


## A few ways industry has answered production problems ... with *Glass*



### *Glass* SAFETY GUARDS

Many modern grinders now come equipped with their own goggles. Libbey-Owens-Ford Safety Glass keeps sparks and particles from flying into workers' eyes—but allows full visibility of the work. Workers' forgetfulness about wearing goggles is double-checked when this protection is provided.



### *Glass* CHUTE LININGS

Glass is proving that it is no mollicoddle. In many plants, its abrasion and corrosion resistance has been put to use in chutes of various types—for grain, salt, coal, coke—just to name a few. The result? Longer life for chutes that formerly were worn down quickly by abrasive materials and by corrosion.

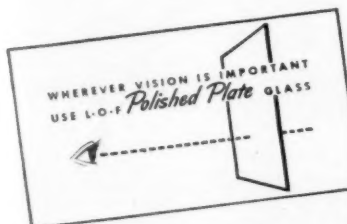


### *Glass* PARTITIONS FOR WORKERS

Here's an excellent way to give each worker some degree of privacy without creating a "cooped-up" feeling. Use a partition of translucent glass down the middle of the worktable. It transmits light—prevents shadows that other materials would create. Yet it guards workers from distractions due to movements of workers across the table.

Glass is a truly versatile material. Transparent, of course. But also hard, smooth, strong, acid-resistant, weather-resistant. It can be tempered for extra strength and for resistance to thermal shock.

Think about these properties of glass as you work out your own problems. Possibly glass can help you. We'd welcome the opportunity to show you how. Libbey-Owens-Ford Glass Company, 5934 Nicholas Bldg., Toledo 3, Ohio.



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- ★ Any Size up to one ton

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**FOREST CITY**  
FOUNDRIES CO.

2500 West 27th St.  
Cleveland 13, Ohio

PHONE PROspect 5040

## Standardization of Electric Apparatus

(Continued from page 282)

ing. talents and manufacturing "know how" on fundamental improvements in the line.

(4) Get these improvements into the product *promptly* to stimulate rather than stifle progress.

The utilities also have their part to perform if this program is to be successful. It is absolutely essential that the utilities diligently and consistently pursue the policy and practice of applying standards wherever possible. It is not enough to agree on standardization in principle, or to accept a set of standards on paper. The utility must carry through by making the use of standard equipment a definite part of its purchasing policy. One utility executive has suggested that in connection with system changes or expansions, those responsible should be required to demonstrate why a standard article cannot be adopted in any case where the use of non-standard equipment is being proposed. Utility purchasing agents can make a vital contribution in this carry-through phase of the program.

## Inflation Can Still Happen Here

(Continued from page 98)

loosening of price control until victory in the war against inflation is assured.

Industry and OPA will, of course, have pricing problems on the small amount of reconversion which can take place in the coming months. We shall need your help on these problems. I think you will understand, from what I have said above, that the pricing standards which we develop, with your help, for these cases will need to fit with the strict standards that are still necessary over the whole field of war goods, industrial products, and consumer goods, because of the highly inflationary general situation.

Whatever pricing for reconversion items is worked out in cases in the coming months, it must be inferred that these standards set hard and fast rules for the real period of reconversion which will come later. Sound standards for that can only be worked out as the answers to the questions stated

(Continued on page 286)

*For those tough pulling jobs—  
Simplex Jenny Center Hole  
Hydraulic Puller!*

Five models, capacities 30 to 100-tons.



Completes in minutes—production, maintenance and repair jobs which otherwise require hours. Pulls, pushes or lifts and can readily be set up as a portable press. Center hole makes unit a great saver of manpower when pulling bushings, cylinder liners, pistons, wrist pins, valve seats, keys, wheels, sprockets, gears, boiler tubes, pipes, etc. Built of heat treated alloy steels. Ask for Bulletin No. 43J.

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*Better, Safer Jacks Since 1899*

Write for bulletin on the proper care and lubrication of jacks.

**Simplex**  
LEVER · SCREW · HYDRAULIC  
**Jacks**

# 2 reasons why FLEUR-O-LIER means dependable Fluorescent lighting!



Few users realize the importance of Certified Ballasts and Certified Starters in the operation of fluorescent lighting fixtures. But they are so vital to good fluorescent lamp performance that it's doubly important to get fixtures with "control" equipment you can depend on.

## Get the advantages these 2 important auxiliaries offer!

Here, quickly, is what Certified Ballasts and Starters, in the fixtures you specify, mean to you:

- ★ longer fluorescent lamp life
- ★ greater lighting efficiency
- ★ full use of your wiring system
- ★ **DEPENDABLE SERVICE**



SPEC. NO. 6

That's why about 40 manufacturers of famous FLEUR-O-LIER fixtures use Ballasts and Starters Certified by Electrical Testing Laboratories, Inc., of New York. These parts, like the entire FLEUR-O-LIER fixture, are tested, checked and certified by these impartial experts. They must meet definite specifications for protection of the user and for maximum light from the lamps. Certified Ballasts and Starters can be readily identified by the E. T. L. shield. Look for it when you examine the fixtures you buy or specify.

You can get industrial and commercial type FLEUR-O-LIER fixtures—embodying Certified Ballasts and Starters—with the necessary WPB priorities. And all equipment meets with government restrictions in the use of critical materials.



SPEC. NO. 6

FLEUR-O-LIER MANUFACTURERS • 2139-3 KEITH BUILDING • CLEVELAND 15, OHIO

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CERTIFIED FIXTURES FOR FLUORESCENT LIGHTING

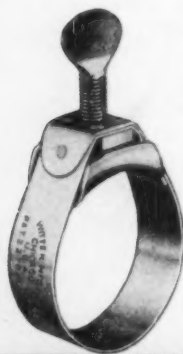
Participation in the FLEUR-O-LIER MANUFACTURERS' program is open to any manufacturer who complies with FLEUR-O-LIER requirements

**Our Punch Presses  
Are More Flexible  
And Productive  
With WITTEK  
Automatic Roll  
Feeds And Reel  
Stands**



Manufacturers of metal stampings facing problems in the feeding of coiled strip stock to punch presses will find that Wittek Automatic Roll Feeds and Reel Stands conserve man-hours and achieve new high production levels.

Providing an improved and simplified method of punch press operation, Wittek Automatic Roll Feeds and Reel Stands insure rapid, safe and accurate feeding under all conditions. Made in four different types to meet all automatic feeding requirements. Write for complete details. Wittek Manufacturing Co., 4305-15 West 24th Place, Chicago, Ill.



**Wittek Hose Clamps** for over twenty years identified with the Automotive and Aviation industries, are noted for their permanent leakproof hose connections. For original equipment and replacement.



**WITTEK** MANUFACTURING CO.  
4305-15 W. 24th Pl., Chicago

## Inflation Can Still Happen Here

(Continued from page 284)

above become clear. We believe that OPA, if it is still here then, should pursue a flexible policy, changing the pricing standards whenever necessary to fit changes in the basic elements of the situation.

In the meantime we are still in a critical situation in both wars, the military war and the war against inflation. The stabilization problems are grave. These problems have been created by the war. Although we do not like them and all long for their disappearance, we must continue to deal with them effectively as long as they persist. If we do not overcome them, they will overcome us—and an orderly transition to a normal peacetime economy will be impossible.

1 1 1

## Simplified Scheduling Procedure

(Continued from page 120)

fects this scheduling. He merely says: "This is when I am going to deliver these items under my present schedule."

This is normal business practice, because when you place an order with a man, you have a right to know when it is going to be delivered, and the only case where they may go beyond the prime level is where it is not an M-293 product. For example, if a winch, which is not an M-293 product, had a motor in it, then the claimant agency could get to the winch builder. But as far as the M-293 product producers are concerned, there is no vertical change below the prime level ex-

cept in that one instance which I have explained to you, where it is not for incorporation to another M-293 product.

This should eliminate a large flow of paper that has never been seen here in Washington but has been actually there because it has been floating back and forth between the primes and their subs. As a matter of actual practice, we are almost operating on this basis now because we have gone as an expedient means to this as we got our experience.

We are now stating just the way this will be handled from here on in, and the only thing that the M-293 producer must do is fill in the delivery dates.

Here are the results on paper, which is as far as these revisions go. On the "X" products we anticipate a substantial savings in paper work because of the fact that a number of companies will be exempted from filing their schedules. The "Y" products will be reduced so that that would eliminate some of that work. The "Z" products are not going to be any more, and we have this simple order identification which should make a rather substantial reduction in that work. On the "Undesignated"—that being our special production trouble-shooting mechanism we anticipate that there will be no great change in the amount of paper work.

**R. M. Hatfield:** This order represents only three changes of policy and the rest of the changes are in the operations end. The first change in policy is that we now put in the manufacturers' hands the responsibility of establishing, maintaining and freezing his order which formerly we didn't permit. We now

(Continued on page 288)



**WASMER Tru-Fit**

**NUTS & BOLTS  
CAP SCREWS  
SET SCREWS**

**WASMER BOLT & SCREW CORP.**

13600 ATHENS AVE. CLEVELAND, O.



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### TAPS FOR HITLER!

We'll play the bugler's variety later—right now, we're too busy knocking Hitler, Hirohito and their henchmen with more and better springs. You have a problem—springs? You'll possibly find the answer in our data book "Science in Springs". It offers a great amount of useful engineering data for proper spring design. Your name below a request on your company letterhead will bring you your copy pronto.

AS YOU KNOW, there is a wide gap between the *planning* and the final *performance* of any product. Take only one detail—an extension spring, for example. That spring (any spring) is going to play an important part in total performance. It must be exact in every detail. Suppose this extension spring must pull a certain mass over a certain space in a given time. It'll take engineering, chemistry, metallurgy, mathematics to design and manufacture it. It may require new

testing machines or testing procedures, an investigation of metals or metal finishes, quality control by statistical methods, or new methods of production or inspection. Whatever's involved, you can be certain Hunter is well equipped for the job—and is ready for you now. You'll have the assurance that, as far as springs are concerned, your products now and for the future will perform—if the springs are designed or made by Hunter.

**THIS IS AN EXTENSION SPRING**—a mechanical device for storing a tensile force which can be used to exert a pull without motion or which can be released (as below in the Plexiglas model) at any rate to control the movement of or transfer motion to adjacent parts.



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**Y**OUR AIR EXPRESS shipments ought to be handled like hot potatoes, not "parked" on the floor awaiting a "routine" afternoon pick-up. Pack early, phone immediately, and avoid end-of-the-day congestion when Airline traffic is at its peak. That's the way to get fastest delivery by AIR EXPRESS. You're paying for speed... **GET ALL YOU CAN! It's easy. SHIP WHEN READY!**

And to cut costs — AIR EXPRESS shipments should be packed compactly but securely, to obtain the best ratio of size to weight.



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As a result of increased efficiency developed to meet wartime demands, rates have recently been reduced. Shippers nationwide are now saving an average of more than 10% on Air Express charges. And Air Express schedules are based on "hours", not days and weeks — with 3-mile-a-minute service direct to hundreds of U.S. cities and scores of foreign countries.

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**AIR EXPRESS**  
Gets there **FIRST**

Phone RAILWAY EXPRESS AGENCY, AIR EXPRESS DIVISION  
Representing the AIRLINES of the United States

## Simplified Scheduling Procedure

(Continued from page 286)

permit a manufacturer to establish his own freeze.

The second change in policy is that now, for the first time, it becomes public information how long a manufacturer's schedule is frozen. In the past, the industry divisions have directed manufacturers to have a frozen schedule and to file an order board. The sequence is frozen for a certain period which only the manufacturer and the industry division knew. Now the information is available to everyone. Any manufacturer who has a frozen schedule must follow the freeze interval specified in the table, so everyone knows that if the "XYZ" company says "I can't accept your order because I have a frozen schedule," the prospective purchaser can state: "Will you accept it four months from now, because you have a four months frozen interval?"

The third change in policy is that we now permit the manufacturers, who prior to now were not permitted to file an order board, to file an order board of a frozen schedule and receive the protection of a frozen schedule. It means now that a manufacturer who wants a frozen schedule if other members of his industry have it can apply for and get that protection, which means that a subsequent receipt of a higher rated order, a triple "A" or a directive, wouldn't upset his sequence of shipment.

Those three changes are the only policy changes that have been made under M-239.

1 1 1

## Get Going on Termination

(Continued from page 85)

if the contractor is ready to state what he wants, when he wants it, and why.

There are numerous details which the contractor can take into consideration to his own advantage. As an example, deserving special consideration is the termination phrase. "The Government upon termination agrees to pay the contractor for all completed articles delivered to and accepted by the Government".

There is a real difference between "completed" and "accepted". The contractor should take steps to have

(Continued on page 290)



Photo U. S. Signal Corps

**To Speed Delivery and  
Assure Protection —**



**Munitions and Supplies  
Go to War in  
GAYLORD  
CONTAINERS**

Packaging problems of today's global war presented many new demands to Gaylord's packaging specialists. From the designing of special shock-proof cartons used in dropping munitions from airplanes to the production of food containers which withstand surf-borne landings and tropical moisture — Gaylord is playing a vital part in protecting and speeding delivery of war materiel.

*You can play a vital part  
— Buy More War Bonds!*

**GAYLORD CONTAINER CORPORATION, General Offices: SAINT LOUIS**

CORRUGATED AND SOLID FIBRE BOXES

FOLDING CARTONS...KRAFT GROCERY BAGS AND SACKS...KRAFT PAPER AND SPECIALTIES

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*"Good Pictures" BRING YOU TOGETHER.*

FROM SNOW to sunshine there is no closed season for Good Pictures. To your soldier or sailor doing his duty "over there" your pictures are the visual symbols of the things he loves.

Take each picture carefully. Preserve your present equipment, save vital film and make each picture a Good Picture.

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OPTICAL DIVISION

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**The Bissett Steel Company**  
...WAREHOUSE PIONEERS

Twenty-three years ago the Bissett Steel Company opened one of the Midwest's first independent steel warehouses, and from that day forth established a reputation for pioneering in its field.

Pioneering today is no less important than it was yesterday. At the moment, the problem of N. E. replacements is foremost in steel users' minds, and once again, Bissett is doing a pioneering job—making research, collecting facts, gathering case-history, material of inestimable value to production men, purchasing agents and executives.

This information will soon be released. And any information possessed by our engineers and metallurgists is at your disposal for the asking. When you have a tough problem, give us a ring.

**FOR IMMEDIATE DELIVERY**  
N. E. Steels and Standard S.A.E. Steels, both Carbon and Alloy, Hot Rolled and Cold Drawn • Chisel Steels • Cumberland Ground Shafts • Drill Rod • High Speed Tool Bits • Shim Steels • Tool Steels • Tool Steel Tubing.

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MAIN OFFICE & WAREHOUSE  
947 E. 67TH ST. • CLEVELAND  
TELEPHONE HENDERSON 0993

## Get Going on Termination

(Continued from page 288)

Government inspectors accept immediately all completed items.

Other factors that deserve consideration are:

1. Maintain records for each contract to identify manufacturing aids, such as dies, jigs, fixtures, gages, etc., which have no value except for scrap.

2. Become familiar with the Government partial payment provisions in order to determine financial assistance needed.

3. Take advantage of the Government guaranteed bank loans if necessary.

4. Keep in touch with the developments on the battle fields which will be of help in anticipating the need for the products being manufactured by a particular plant, or on the other hand, the possibility of a termination involving them.

5. Begin thinking about plans and policies for transfer or release of all employees which will come about through termination, and confer with the War Manpower Commission Regional Office on this phase.

6. In segregation and protection of all Government property, keep a strict accounting of the cost of such action, as the Government will reimburse companies on this score.

### Prepare for Inventory

7. Select and train personnel now so that they will be qualified to take the physical inventory.

8. Set up a separate account, with proper forms, so that all expenses of termination in the plant may be accurately listed and presented as part of the company's charges.

9. Do not hesitate to ask the contracting officer to settle any points about which there is doubt in regard to contracts.

10. Keep in close touch with the regulations of the War Production Board and any other Government agencies which have issued regulations regarding use of raw materials.

There are many phases of Government policy in termination which have not been settled. These will in no way affect the urgency for companies to get their own contractual slate in order, and to prepare their own organizations for quick settlement of contracts.

While greatest termination emphasis is placed on Army contracts, the general principles apply equally to all Government contracts.

# PRODUCTION



***It's a duty now to make tools last longer—to keep them dependable and available for accurate work***

The first requirement for getting the most out of precision tools — for helping production "to march" — is to understand the importance of proper treatment.

It doesn't take much — a little care here and there will extend the life of a precision tool and prevent premature impairment of its accuracy. Here are some simple suggestions:

Do not "force" the measuring points or surfaces. Do not carry the tool in a pocket having grit in it. In the grinding room protect the tool from coolant which might carry abrasives into accurately fitted parts. Do not subject dial gages and other sensitive tools to hard shocks. Protect graduations, particularly those on vernier tools, from becoming worn or scratched.

Set tools down gently — do not drop them in a drawer or on a shelf. It is a good plan to keep each tool in a box to prevent other tools from striking against finished surfaces or edges. Bases of tools such as height gages, indicators and V blocks should be kept free from dents or pits and should not be used on surfaces having chips or grit upon them.

Finally, keep tools clean and lightly oiled to prevent rusting.

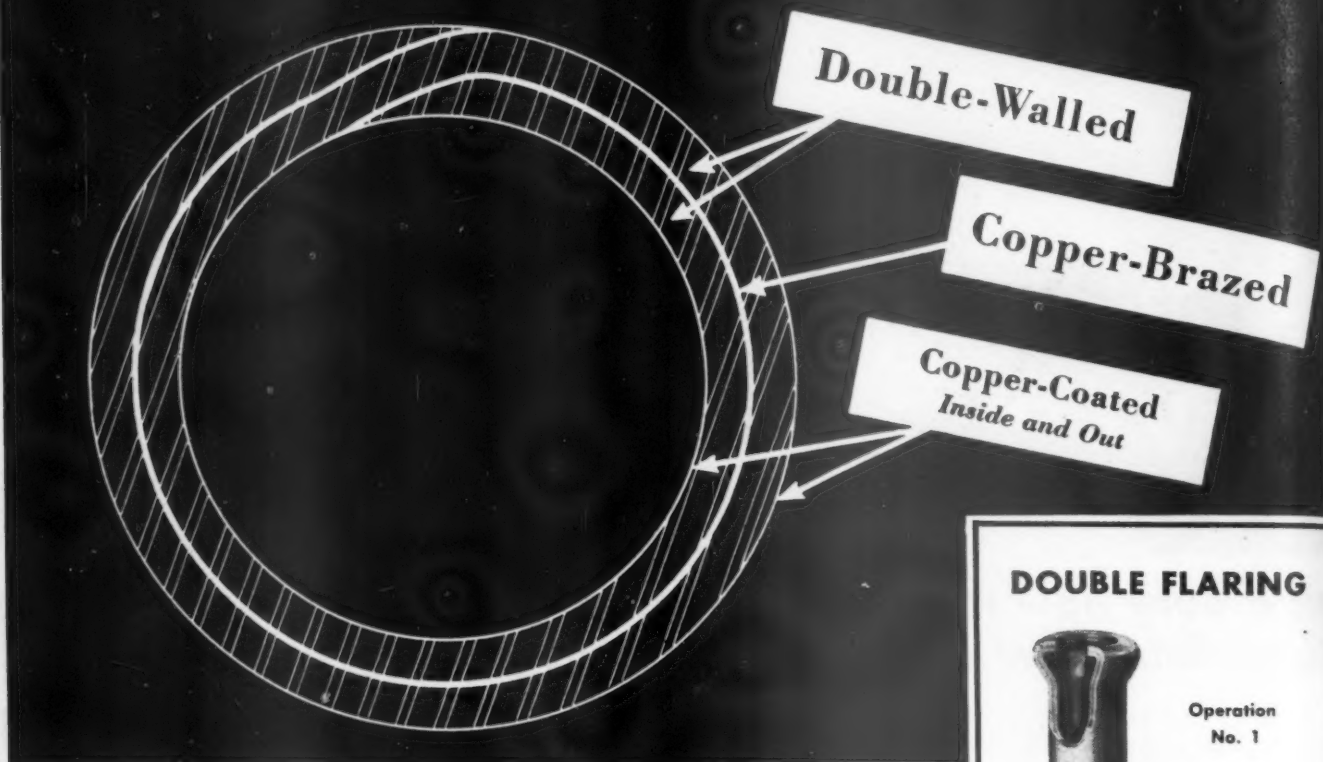
*Each tool saved from premature wear means one more available for the manufacture of the implements of war our armed forces need.*



# BROWN & SHARPE TOOLS

# BUNDYWELD

## FAMOUS LIFE LINES



### The Solid Double-Wall Steel Tube

Bundyweld Steel Tubing is laterally rolled by a special Bundy process from a single copper-coated S.A.E. 1010 steel strip.

It then immediately passes through a brazing furnace and a long cooling chamber, both with reducing atmospheres, resulting in a *solid* double-wall steel tube completely copper brazed throughout the entire 360° of wall contact.

This method of rolling and brazing Bundyweld assures the utmost

in ductility, cleanliness and uniform wall thickness.

Bundyweld is furnished hard or annealed, in a wide range of standard diameters and gauges up to  $\frac{5}{8}$ " O.D. Special sizes cold drawn as desired. Also furnished in Monel Metal.

Bundy Engineering and Research stand ready to help in the planning of peacetime products in which tubing may be used. Write Bundy Tubing Company, Detroit 13, Michigan.

## BUNDY TUBING

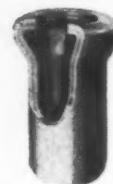
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ENGINEERED TO YOUR EXPECTATIONS

### DOUBLE FLARING



Operation  
No. 1

Wherever S.A.E. or other flare type fittings are used, we strongly recommend the double-lap flare illustrated above and below. This type of joint is leak-proof, is held to close tolerance, and will withstand over-torquing and repeated tightening and opening for service or inspection.



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No. 2

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Get in Your Scrap

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3100 19th Street  
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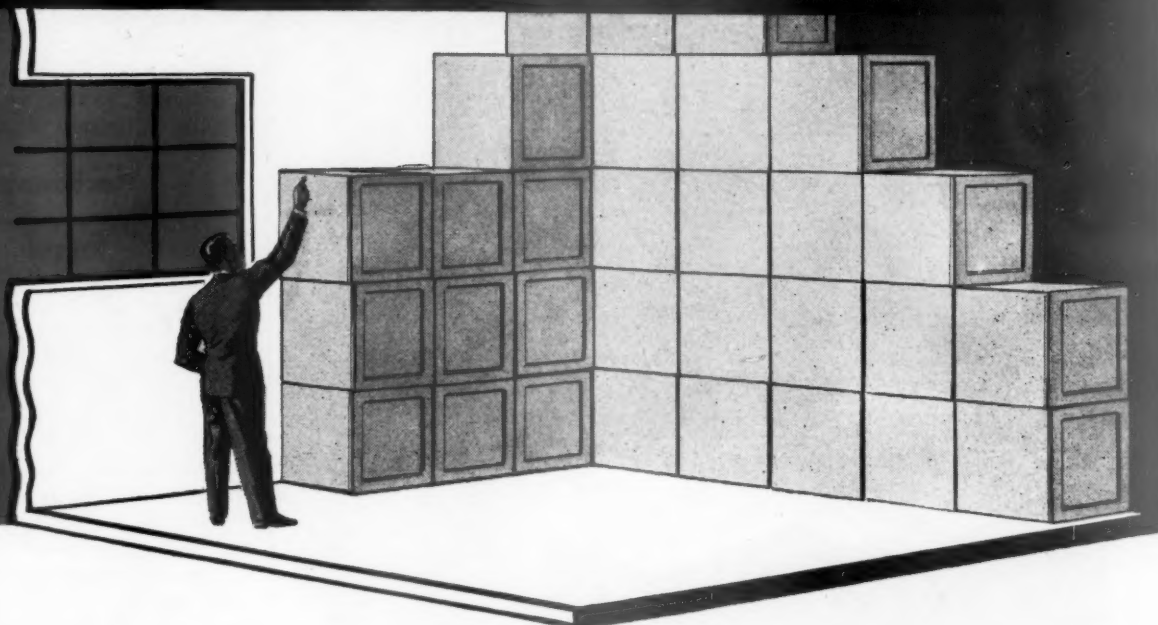
Lapham-Hickey Company  
3333 W. 47th Place  
Chicago, Illinois

Rutan & Company  
112 South 16th Street  
Philadelphia, Pennsylvania

Eagle Metals Company  
3628 East Marginal Way  
Seattle, Washington



# THE CEILING'S THE LIMIT!



IT'S literally true—this good old American expression—when you speak of storing materials with a Barrett Portable Elevator: *the ceiling's the limit!*

Making use of vacant air space with floor-to-ceiling storage takes *less* warehouse area—makes *more* space for productive purposes. It means less rent, less fuel, less illumination, less maintenance. It may even save you the cost of a new building.

But whatever else it saves, you can be

sure of saving time, effort and manpower. With a Barrett Portable Elevator to handle materials in and out of storage, one man does more than three or four.

If modern time, space and man-saving methods can help you, see a Barrett Engineer—*now*.

**BARRETT-CRAVENS COMPANY**  
3280 West 30th Street • Chicago 23, Illinois  
*Representatives in All Principal Cities*

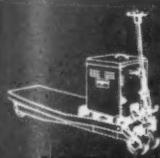


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ONE MAN DOES MORE THAN 3 OR 4.. WITH A BARRETT PORTABLE ELEVATOR



ELECTRIC LIFT TRUCKS

**Barrett  
Handling  
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HAND LIFT TRUCKS



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Here is a brand-new catalog filled with information, tables and specifications describing Chicago "Safety Plus" Socket Screw Products. It is designed to provide the answer to your Socket Screw problems, quickly and concisely . . . This useful catalog is now being distributed—if you have not received your copy, write us direct.



Chicago "Safety Plus" Socket Products include Socket Head Cap Screws, Socket Set Screws, Pipe Plugs, Stripper Bolts and Square Head Set Screws. They are available in a wide range of sizes through your nearest Mill Supply distributor. Insist on Chicago "Safety Plus" Socket Screws.



# THE CHICAGO SCREW CO.

ESTABLISHED 1872

1026 SO. HOMAN AVENUE

CHICAGO, ILL.

## Renegotiate Your Thinking

(Continued from page 80)

products. The Government buys the outputs of the efficient makers and those of the inefficient ones alike because it has to have the munitions. Peacetime competition has no customers like that, and before long we are going to make a partial return to peacetime competition."

As a matter of fact, the Army is not waiting for peacetime competition to straighten out those differences in efficiency. They have passed the point where delivery was the only element to consider and the fundamental values of purchases are having attention; that's a tip.

### Purchasing's Job

What is the responsibility of the purchasing function of the organization, and, incidentally, of the men who carry on the job. The opinion of a P.A. might be propaganda; so, let's get clear beyond that suspicion.

*The Spirit of Enterprise*, by Edgar M. Queeny, attracted wide attention and became a nonfiction best seller. He is a very successful businessman, head of a large chemical company, frequently referred to as an authority on sales promotion and advertising. His book also put his views on purchasing on the line; the position of purchasing and purchasing agents in this competitive system we call free private enterprise. Look them over:

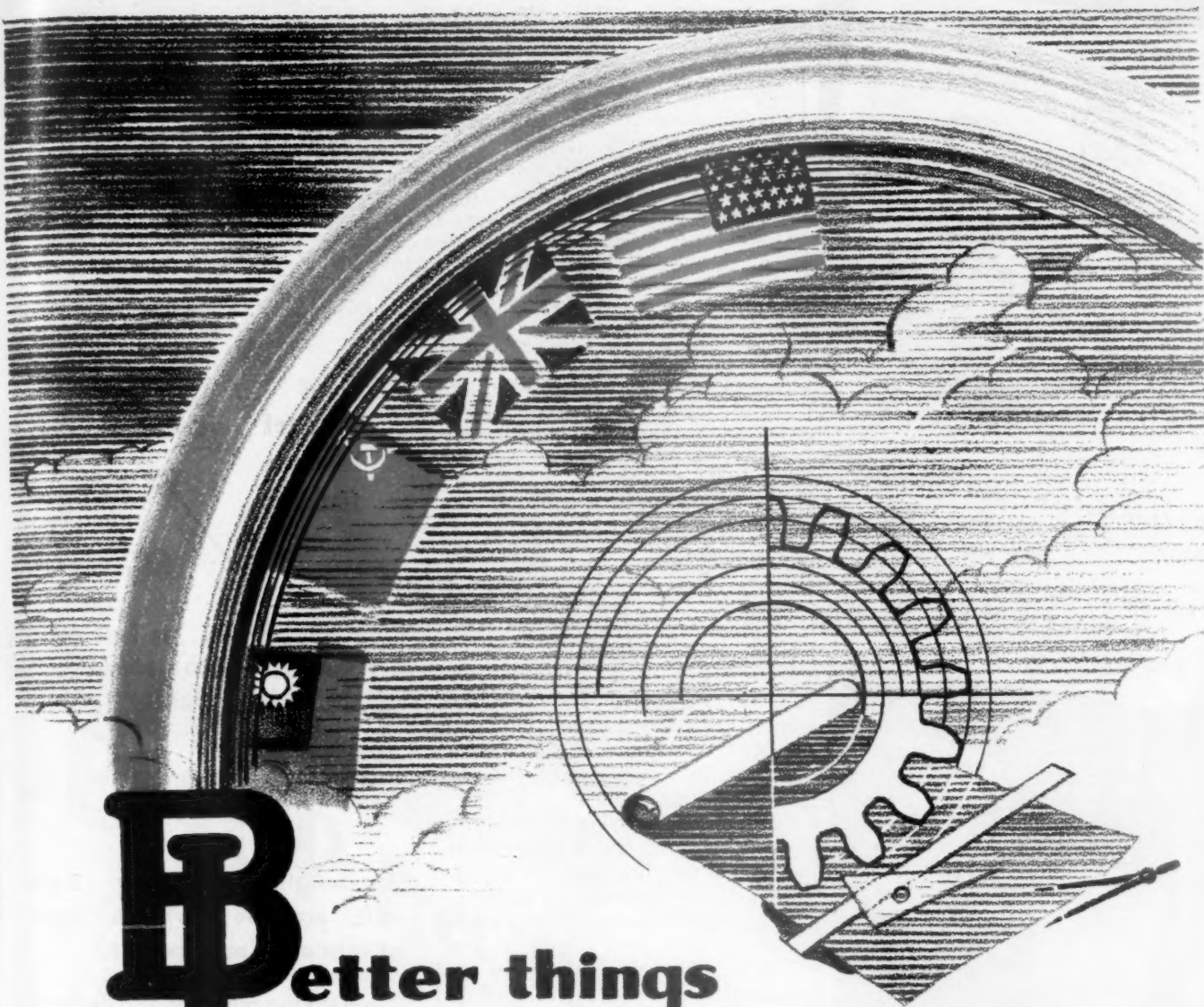
"The hundreds of thousands of purchasing agents are the real guardians of the American people against monopoly. The purchasing agents have business sense, not political sense. It is they who are insisting on two or more sources of supply. It is they who daily insist that the prices they pay bear reasonable relationship to cost; and, where necessary, it is they who induce new producers to start up. Vying to produce better or cheaper products or something that will do a new and useful job, competition forces all companies to work for the ultimate consumer."

### The Spirit of Enterprise

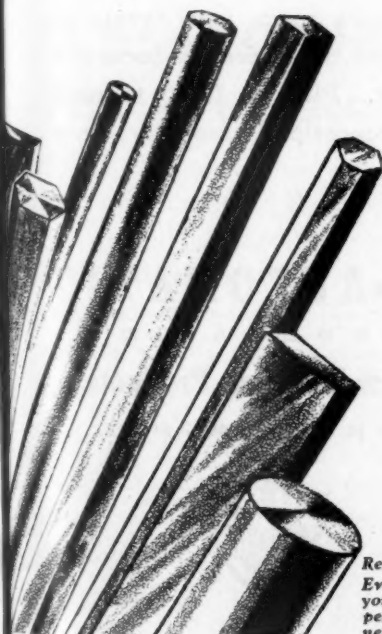
Did you know purchasing was that important? that purchasing is the spirit of enterprise and the sparkplug of the free competitive system all business leaders wish to protect? Don't use that as an argument for a lower price, but remember it is the reason why all prices

(Continued on page 296)





# Better things Loom ahead for...Steel



WHEN the war clouds are rolled back and the rainbow of V-day brings the promise of enduring peace . . . that will signal the upsurge of America's great industrial productive capacity.

Better things for better living . . . will be made of *better steels*. As designers plan and as engineers produce for the needs of the future . . . B&L Cold Finished Bar Steels, Shafting, Screw Stock, and Alloy Steels will serve in the front lines of reconstruction.

**COLD FINISHED STEEL AND SHAFTING**

**BLISS & LAUGHLIN, INC.**

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Sales Offices in All Principal Cities

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Remember . . .  
Every Extra Bond  
you buy brings  
peace that much  
nearer.





Bacteria Gus is a mean little cuss—  
Spreading ailments that  
start with a sneeze;  
He'd pass on the flu  
From cup lip to you,  
Except when you use one of these!

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Paper Cups



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416 Second Street, San Francisco 7, Calif.



Divisions of  
**UNITED STATES  
ENVELOPE CO.**

13 Plants from Coast to Coast

## Renegotiate Your Thinking

(Continued from page 294)

should be as low as possible and still give a fair return to the efficient producer and distributor.

We gain by experience or lose out because we didn't. Expanded inventories were one of the keys to that miracle of war production, but conditions can switch them from being the greatest asset into the possibility of their becoming the most dangerous liability. Some companies have expanded production and inventories many, many times. Examples are fairly common where inventory values have recently been many times the capitalization of the company. Don't think management isn't worried about that situation; it is one every purchasing man must recognize too.

### A New Word

Materials accounting is a new word in the working vocabulary of many organizations. Its forced introduction brought cries of red tape, but some of it fits and will stick. It can be done best, in many organizations, in the purchasing department.

Scheduling production and materials three or six or nine months ahead, as war production compelled us to do, has done things to the old hit or miss methods of many organizations.

New materials, substitutes and synthetics have been developed and their use in civilian production must have consideration in the purchasing department as well as in the engineering and production departments. Some of them have glamorous backgrounds and will have expert sales promotion, but the four fundamental measures of values will have to be applied to them as they would to the old stand-bys they will attempt to replace.

Subcontracting has had wide acceptance in war production and experience with qualified subs may throw additional consideration for purchasing, in the controversial management policy and operation problem "should items be manufactured or purchased?"

In fact, purchasing was never in better position to sit in on the policy determinations of the organization, but it must be qualified to do so and a bang-up mechanical setup to handle requisitions and purchase orders is not the principal qualification.

Forward pricing is a new tech-  
(Continued on page 298)

**CONCENTRATE  
ON ASSEMBLY**

Your  
product  
moves to  
market...



...as fast as  
the slowest  
part.

Accelerating assembly lines  
with accurate parts in large  
quantities is our specialty.

Time saving methods and devices  
we have recently invented enable  
us to make parts better and  
faster for less!

The more space you devote to  
assembly, the more products you  
market. Plan on U.S. to start  
your peacetime assembly lines  
sooner.

**U.S. AUTOMATIC  
CORPORATION**

**Screw Machine Products**

AMHERST • OHIO



ACCURACY  
PLUS  
WITH



## "A Steel Of Uniform Quality For Precision Products"

★ For machinists and die makers who wish to increase production and improve the quality and uniformity of their product we recommend Jessop Precision Gauge Stock. It is ideally suited for many applications requiring two flat parallel surfaces and its use eliminates the practice of machining stock for precision work from bars.

Jessop Precision Gauge Stock is finish ground on all dimensions to a thickness tolerance of .001". Standard length is 18" with sizes ranging from  $\frac{1}{64}$ " to 1" in thickness and from  $\frac{1}{2}$ " to 6" in width. Complete information furnished on request.

### Jessop Steel Co.

Head Office and Works

Washington . . . . Penna.



Established 1901

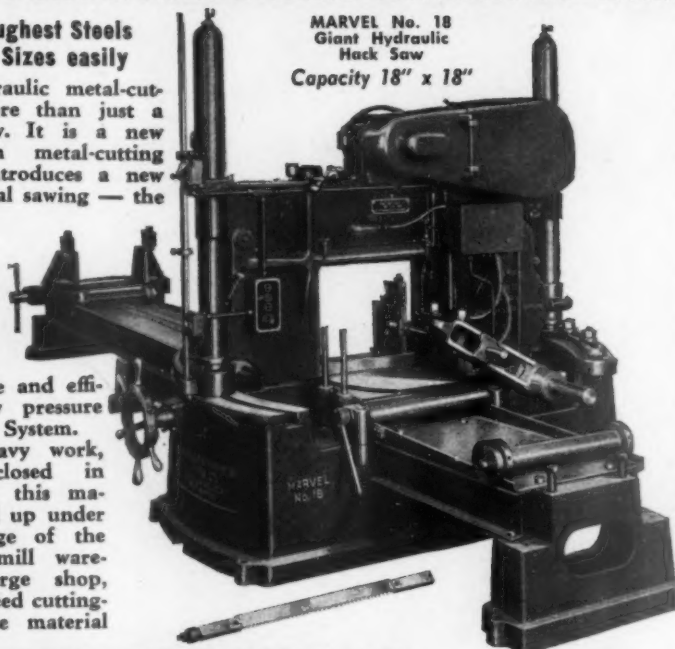
# MARVEL SAWS

## CUTS the Toughest Steels and Largest Sizes easily

This giant hydraulic metal-cutting saw is more than just a larger hack saw. It is a new development in metal-cutting methods that introduces a new principle of metal sawing — the Roll-stroke blade action makes it possible to cut the toughest steels in the largest sizes easily and rapidly. It also permits a simple and efficient, very low pressure Hydraulic Feed System.

Built for heavy work, completely enclosed in heavy housing, this machine will stand up under the rough usage of the average steel mill warehouse and forge shop, where it will speed cutting-off, and reduce material loss.

MARVEL No. 18  
Giant Hydraulic  
Hack Saw  
Capacity 18" x 18"



**ARMSTRONG-BLUM MFG. CO.**

"The Hack Saw People"

5700 Bloomingdale Ave., Chicago 39, U. S. A.  
Eastern Sales Office: 225 Lafayette St., New York

Write for  
Catalog

## STRETCHING AVAILABLE MANPOWER— ---Wherever there's an Industrial Cleaning Job!



That's your objective in buying cleaning materials. Not the cheapest cleaner you can buy, but the cleaner that does a better job with less use of available man-power.

That's why you should investigate.

### MAGNUS SPECIALIZED CLEANERS

for your cleaning operations, whether you use cleaners for metal parts, truck bodies, food equipment, plant floors, cafeterias and restrooms or for hand cleaning.

There are Magnus Cleaners especially designed for your cleaning operations which will not only help greatly in these days of man-power shortages, but do an all around better and lower cost job.

Let us know what your cleaning jobs are. If they are not discussed in one of the many Magnus Handbooks covering your industry, we'll make specific recommendations.

### MAGNUS CHEMICAL COMPANY

Manufacturers of Industrial Cleaning Materials — Washing, Drying,  
Pickling Equipment — Metal Drawing Lubricants

99 South Avenue

Garwood, N. J.

Service Representatives in Principal Cities



# MAGNUS CLEANERS

## Renegotiate Your Thinking

(Continued from page 296)

nique in Army purchasing. Many purchasing organizations might consider its practical use as well as its implications. Termination of contracts throws definite responsibilities on the purchasing department of the contractor, so do the adjustments and settlements.

### Get It At Any Price

The cost-plus contract is passing with the overtime-at-double-time-regardless-of-cost period of war production. Could be that purchase records will enter the war contract settlements and the get-it-at-any-price transactions might get a brushing off; after all, these contracting officers are purchasing agents in uniform.

Contractors, and especially the purchasing and production departments, must renegotiate their thinking. All the problems of waste and excess costs are not in the personnel department's handling of manpower.

### P.S. Purchasing-Salesmanship

Selling the company's dollars for their full value in materials or service, at the same time selling the company as a fair dealer and a square shooter, is the very best type of salesmanship; and it is also recognized as very successful purchasing.

That kind of purchasing-salesmanship will naturally result in sales of the company products. It just couldn't help doing so unless all the books and slogans on how to make friends and influence people are screwy.

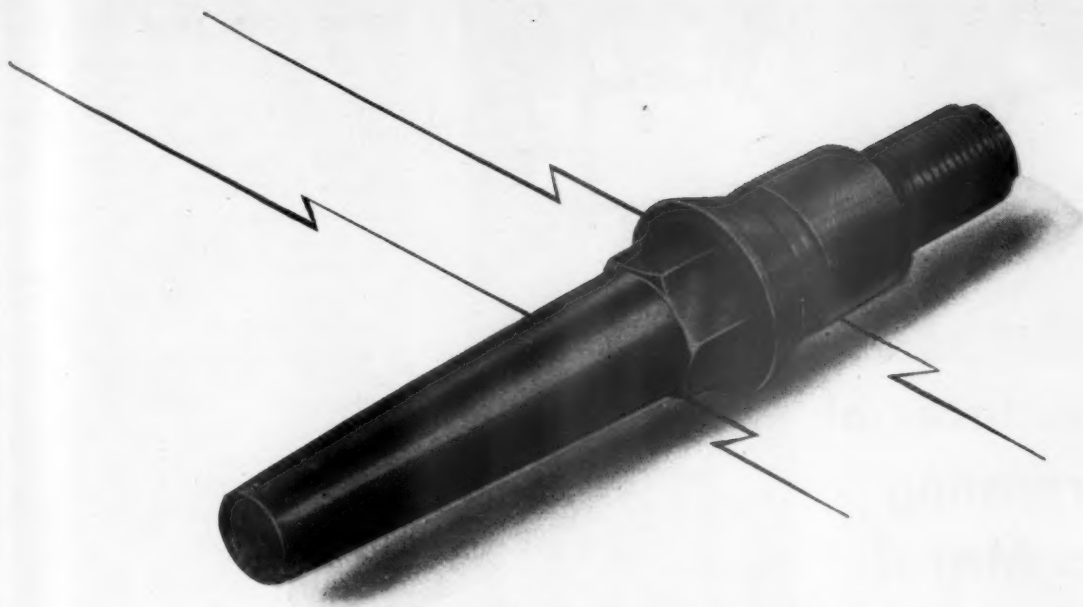
Attempts have been made to put the cart before the horse. Now and then someone gets overanxious to secure the end-sales result, and loses sight of the only practical means of doing so through purchasing. That kind of sales-purchasing generally stacks the cards against the dealer and leaves him with a bust hand.

A frisky colt will get seriously injured by the barbed wire, attempting to get into another field where the pasturage is no better—if as good. A frisky P.A. can make the same mistake and get bruised up for his trouble.

There is no division of the company having greater opportunities now, and in the future, than purchasing. A good purchasing job spreads materials, service and good will that can be felt and appreciated

(Continued on page 300)





When thermal conductivity and extensive machining are essential . . .

## There's a job for **CHASE** Tellurium Copper

In torch tips, for example, Tellurium Copper offers *both* the ease of machining needed for economical production, and the high thermal conductivity needed for successful performance. Its high *electrical* conductivity—averaging 90% of copper's—is an equally important advantage in current-carrying parts requiring machining to close tolerances.



Another feature—the tellurium that makes this unusual

alloy almost as easy to machine as free cutting brass has no harmful effect on its hot working properties. Tellurium Copper hot forges as easily as copper itself.

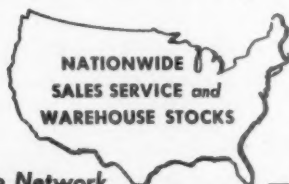
Have you an application that calls for this combination of conductivity, machinability, forgeability? Then investigate Tellurium Copper. Just call the nearest Chase Sales Service Office... the copper alloy specialists there are ready to give you the full facts on the newest developments among the copper alloys.

**CHASE BRASS & COPPER CO. Incorporated, WATERBURY, CONNECTICUT**

*Subsidiary of Kennecott Copper Corporation*

ALBANY\*  
ATLANTA\*  
BALTIMORE  
BOSTON  
CHICAGO  
CINCINNATI  
CLEVELAND

DETROIT  
HOUSTON  
INDIANAPOLIS\*  
KANSAS CITY, MO.\*  
LOS ANGELES  
MILWAUKEE

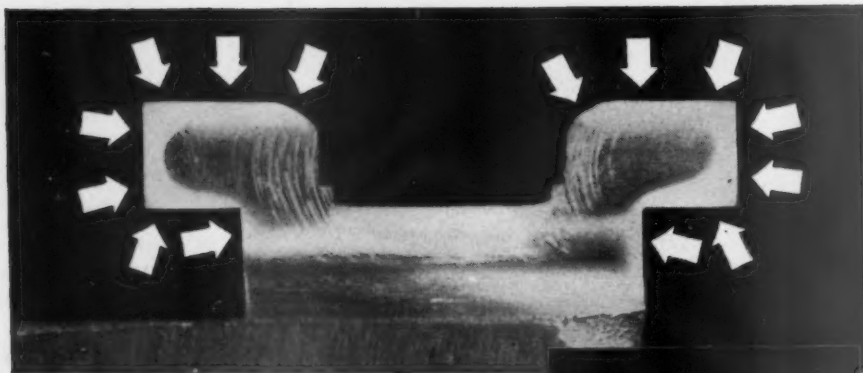


MINNEAPOLIS  
NEWARK  
NEW ORLEANS  
NEW YORK  
PHILADELPHIA  
PITTSBURGH

PROVIDENCE  
ROCHESTER\*  
SAN FRANCISCO  
SEATTLE  
ST. LOUIS  
WASHINGTON\*

*\*Indicates Sales Office Only*

**This is the Chase Network —handiest way to buy brass**



## Bearing surfaces of wear-resisting Ampco Metal cost less..

**-with welded overlays of Ampco-Trode**

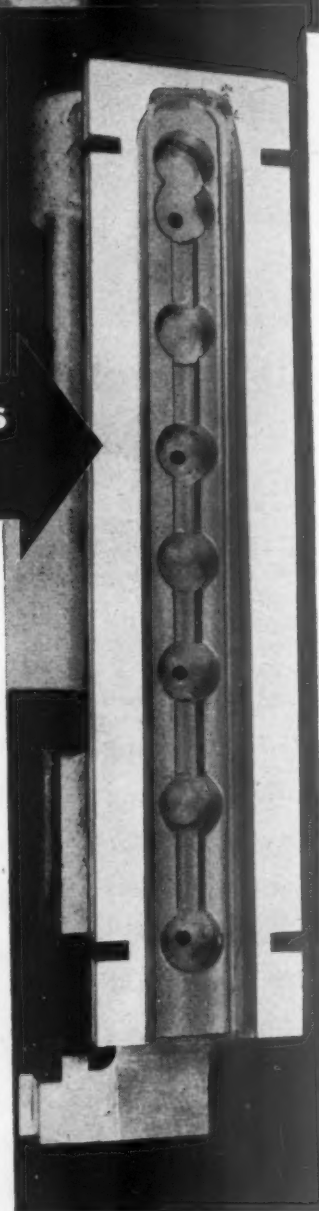
Welding—the fabricating method which has made such tremendous strides in war production—offers you an economical means of building up surfaces that resist wear, shock, and corrosion.

With Ampco-Trode, you can overlay less costly base metals with the same high-quality aluminum bronze which has found such wide acceptance in the form of castings and wrought products as Ampco Metal. Any grade of Ampco-Trode—selected for your required physical properties—can be welded to almost all metals and their alloys.

From giant marine propellers to the smaller machine parts or valve seats, you can apply aluminum bronze where needed. (Illustrated: gun slide overlaid with Ampco-Trode on bearing surfaces.)

Your questions on specific applications will be gladly answered by the nearest Ampco field engineer. Don't delay—call or write today.

Write for Ampco-Trode catalog.



W-1

**Tear out and mail coupon today!**



Reg. U. S. Pat. Off.  
AMPCO METALLURGICAL SPECIALTIES  
Ampco Grades 12 to 22 (special alloys of the aluminum bronze class) . . . Ampco-Trode (general industrial bronze) . . . Special Custom Copper base alloys.

Sand Castings . . . Centrifugal Castings . . . Extruded and other Wrought Products . . . Precision-machined Parts . . . Ampco-Trode (coated welding electrode) . . . Ampco Non-Sparking Safety Tools

Ampco Metal, Inc., Dept. P-3  
Milwaukee 4, Wis.

Please send Ampco-Trode Bulletin with information on wear-resisting welded overlays of Ampco Metal.

Name \_\_\_\_\_  
Position \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

## Renegotiate Your Thinking

(Continued from page 298)

in all corners of the organization and the overflow reaches outsiders. A punk attempt to make sales through purchases often brings waves of resentment, and dam(n)s may be the principal result.

A kibitzer must be exceptionally tactful to be welcome, and playing the other fellow's game invites odds. Most companies have a smart sales organization who deal with smart purchasing men; neither is eager to have their purchase-sales relationship perverted.

That subject may be outside the fundamentals of purchasing but it makes a good P.S.

1 1 1

## The Purchasing Viewpoint

(Continued from page 102)

present buying formulae, as follows: WPB regulations, inventories, prices, production schedules, new products and methods, finances and credit. Looking ahead to the day when some of the present limitations are removed and industry is again on a more competitive basis, he declared that buyers will be looking for *good* materials and products instead of *good-enough*, and that greater consideration would be given to cost and price. He said in part:

"Our policy has always been to buy all the standard and special screw machine products we can, as there are always enough to keep us busy which cannot be bought. But if the price is too high, the service too slow, and the quantity sufficient to warrant, we tool up to do it ourselves. You should be able to get and hold this business if you have profited by the experience and the new developments in the past three years.

"Many companies have learned since our entry in the war that they can subcontract to advantage for partially finished as well as finished parts, and will continue to do so if encouraged. This is right down your alley, and you should endeavor to follow up and prove to your potential customers that you can give real service and furnish such parts cheaper and better than they can make them.

"Your ability to bring your engineering experience and improved

(Continued on page 302)



## Mystik Protected to Journey's End

**UTMOST** protection, quickly applied—the sum of the many reasons why Mystik Self-Stik Cloth Tape has passed test after test, earned approvals from practically all branches of the military services.

The risks of war transport compel lasting protection against water and salt-spray—the products of men, money and machines must be saved from needless destruction! Precision parts and equipment must be protected against corrosion and abrasion through manufacture and factory-to-factory transport as well as through factory-to-fighting-front transport.

Mystik Self-Stik Cloth Tape—strong, waterproof and easily applied—excels in protecting—it saves labor, materials and finished goods.

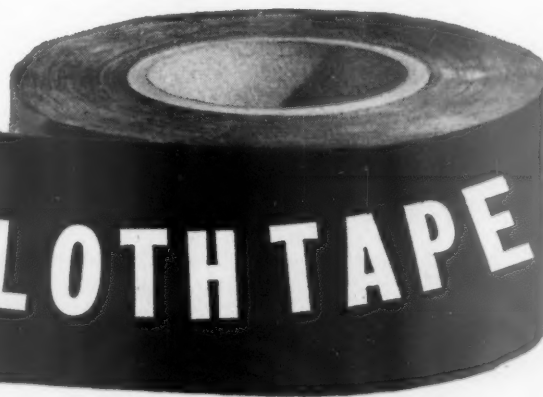
A request on your letterhead will bring you a sample roll—

**Address Department PR, MYSTIK TAPE DIVISION, Chicago Show Printing Co., 2635 No. Kildare Avenue, Chicago 39, Illinois.**

*Mystik Self-Stik Cloth Tape is the result of nine years of development of pressure-sensitive adhesive products, originating with the famous Mystik "Oil-change" sticker, widely used by major oil companies and automotive manufacturers.*

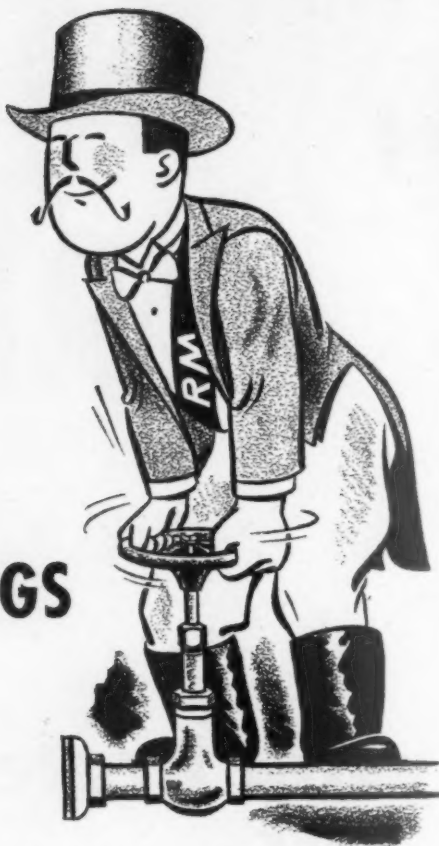
# MYSTIK

*Self-Stik* CLOTH TAPE





# Turn With Confidence To R/M PACKINGS



**L**ike many of us for the past year or two, R/M packings have had to take it. Steam lines, oil lines, fuel lines, and air lines have been carrying terrific pressures. Through it all, R/M packings have shown a performance-record that has more than repaid for many hours of laboratory work. Yes, when the war is over and we can again supply the normal demand, you can turn to R/M packings with greater confidence than ever.



INDUSTRIAL SALES DIVISION  
**RAYBESTOS-MANHATTAN, INC.**  
MANHEIM, PA.

BRIDGEPORT, CONN.

NORTH CHARLESTON, S. C.

PASSAIC, N. J.

**Makers of Packings for Every Industrial Use**



## The Purchasing Viewpoint

(Continued on page 300)

methods in a convincing manner to the Purchasing Agent, and he to his company's manufacturing departments, will determine to a large extent the amount of special screw machine work you will receive, and there should be plenty to keep the progressive shops busy."

Post-war buying policies should be no different from buying policies at any other time, said Mr. Brockway, and he cited five principles that have guided his own purchasing work for the past twenty-five years:

1. Determine first the specification for the material or product to be purchased.
2. Select a dependable and responsible source of supply, and get acquainted with its personnel.
3. Do not shift sources of supply unless just cause warrants it.
4. Have more than one source of supply if requirements warrant economical division of purchases.
5. Honesty and fairness in all transactions.

1 1 1

## Spending and Saving The Peoples Money

(Continued from page 106)

need for engineering advice and planning. Fortunately, such engineering service can be supplemented through the cooperation of federal and state agencies.

**Printing and Paper Experts.** The work of the printing bureau of the division is highly technical, and its staff should therefore be specially qualified and trained. Much of the testing can be handled through the regular laboratory.

**Dietitians.** There should be a state dietitian under the supervision of the purchasing officer, to work with the purchase division and others in determining the quantity, comparative costs, and food values of proper diets for the various classes of inmates and patients in state institutions. By consultation between the purchasing officer, fiscal authorities, and dietitians having access to market figures as developed in the purchase division, important budgetary savings can be effected, and at the same time a varied menu and food of proper nutritional value is assured.

**Chemists and Inspectors.** The purchase division cannot function

(Continued on page 304)



## THE STORY OF STEEL

### FROM FURNACE TO FIRING LINE

IS TOLD BY

### "FACTS-IN-FIGURES"


In a steel mill, Control by Count begins with the ore-cars which are tallied by a Veeder-Root Magnetic Counter, as they unload on top of the furnaces. Ingots are counted as they enter the blooming mill and again counters are used as the steel enters the rolls where space between rolls must be accurately maintained. This space is visualized for the operator by motorized counters that read in thousandths of an inch, and help him to control steel-thickness. Here, too, the white-hot ingots are counted by *their* own light which actuates a sensitive electric tube.

Veeder-Root Counting Devices are also used to measure the number of feet of production of structural shapes . . . the length of any defects in

finished bars . . . the number of "wraps" of steel on reels in reversing mills . . . the length in feet of total sheet produced.

Veeder-Root Counters are used for many different jobs in tube, pipe, and wire mills . . . in handling and transporting . . . to control input of electric current into mill motors, the amount of coal automatically stoked, or the amount of gas consumed. Finally, they do many jobs in the front office, on phones, typewriters, business machines . . . even helping in payroll and personnel work. Then when steel is made into tools of war, the Armed Forces take over, and Control by Count continues right up to the battle lines.

Every inch of the way, steel counts heavily on these "fighting figures" supplied by Veeder-Root Devices. And if your work is of frontline importance, then *you* can count on Veeder-Root, too.

  
**VEEDER-ROOT**  
 INCORPORATED  
 Hartford, Connecticut, U. S. A.



Parts stored in outside storage bins have been standing dormant for a couple of years without injury due to rust. Not all storage facilities provide such limited protection as this, but the record certainly proves that NO-OX-ID is one of the world's best rust preventives. As reconversion takes place, you may have an extreme case of exposure to guard against. If so, NO-OX-ID is safe! In present day routine, you have at hand at least two conditions where NO-OX-ID will save you money.

#### PARTS IN PROCESS

To prevent finger mark contamination or moisture corrosion, coat them with NO-OX-ID. There's a light consistency which when sprayed on the part does not interfere with routine inspection.

#### PARTS IN SHIPMENT

Coat them with NO-OX-ID by brushing, dipping, or spraying. Wrap them with NO-OX-ID-ized Wrapper which conforms readily to irregular surfaces. When sealed, the package is moisture proof.

Dearborn Chemical Company, NO-OX-ID Division,  
Dept. AA, 310 S. Michigan Ave., Chicago 4, Illinois



## Spending and Saving The Peoples Money

(Continued from page 302)

efficiently without a competent staff of chemists and inspectors. The Chief Chemist should act as adviser to the Director of Standards in matters involving scientific tests and formulae. As Director of the laboratory, he will also be in charge of research and can be of invaluable assistance in the origination of new specifications and even of new products.

While general inspection of all lines of purchases is necessary, the inspection of food, fuel, and clothing is especially important, since they are essential to the welfare of state wards. For this reason, the staff must include inspectors of these commodities, even at the sacrifice of other inspection service.

*Part-Time Service.* A special appropriation should be available to hire experts occasionally on a part-time basis, to supplement the regular staff of the purchase division, and to assist in guiding technical standardization and purchase. The purchasing officer should also chart all technical and specialized ability within the state government and arrange to have the services of individuals possessing these qualifications made available to his division as feasible and necessary.

1 1 1

## Utility Buyers Convene

(Continued from page 92)

controls over purchases and inventories, doing away with a large volume of record keeping by some 20,000 companies. These companies, however, remain subject to the other provisions of U-1, including those relating to the construction of extensions, limits of value of MRO jobs and clearance of purchases of specified items through the Regional Inventory Control Offices.

The limiting figure of \$10,000 excludes the dollar value of fuel, water and gas purification and treatment chemicals, and other materials that are specifically excluded from inventory.

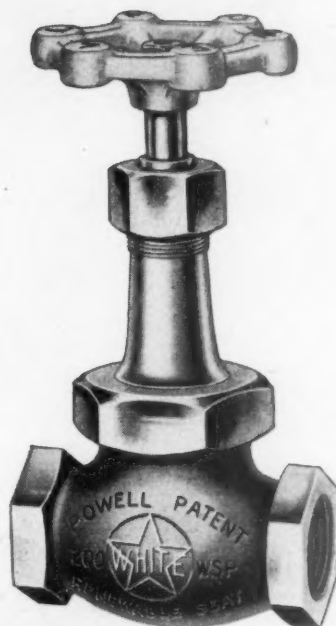
Such material is also excluded from the controls on purchasing, by a special provision.

The amended order makes a  
(Continued on page 308)

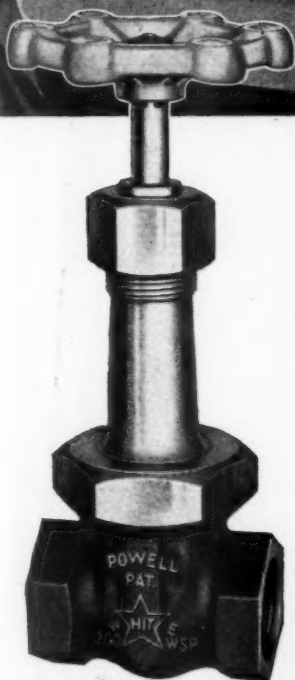




Will it just "do",  
or...will it  
**DO THE JOB**



**Fig. 1703**—Bronze Globe Valve for 200 pounds W.P. Has screwed ends, union bonnet, renewable seat and regrindable, renewable hard bronze semi-cone plug type disc. This valve is especially suitable for throttling service.



**Fig. 375**—Bronze Gate Valve for 200 pounds W.P. Has screwed ends, union bonnet, inside screw rising stem and a special hard bronze disc.

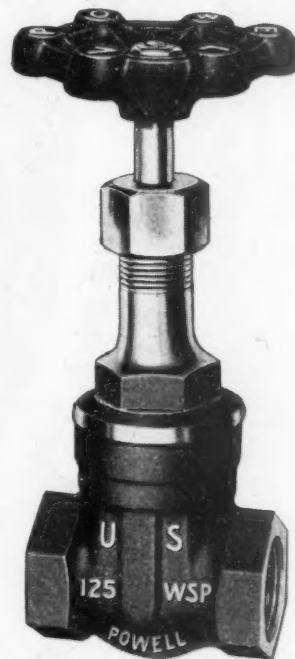
"There is a valve that will *"do"*—or "there is a POWELL Valve that will *do the job*"—what a vital difference in meaning.

But as long as you have POWELL Engineering at your service, you'll never have to make a valve *"do"*—because POWELL not only has a complete line of standard valves as listed in our general catalog but—POWELL Engineering is ready at all times to offer *specialized* service.

Shown here are three of POWELL'S complete line of Bronze Valves. These valves are correctly engineered in every detail for controlling the flow of low-pressure steam, oil, water or gas.



**The Wm. Powell Co.**  
*Dependable Valves Since 1846*  
**Cincinnati 22, Ohio**



**Fig. 500**—Bronze Gate Valve for 125 pounds W.P. Has screwed ends, screwed-in bonnet and inside screw rising stem. Sizes  $\frac{1}{4}$ " to  $\frac{3}{4}$ " are equipped with taper wedge solid disc; sizes 1" to 3" with taper wedge double disc.

**POWELL VALVES**



G E N E R A L C A B L E

Charge to the account

CLASS OF SERVICE	DESIRED CABLE
TELEGRAM	DAY LETTER
DAY LETTER	NIGHT RATE
SERIAL	DEFERRED
NIGHT LETTER	NIGHT LETTER

Patrons should be advised; otherwise, messages will be sent by telegram or cable.

Send the following telegram

Account of  
 DESIRED  
 CABLE  
 PRIMARY  
 PAYMENT  
 RATE  
 DEFERRED  
 PAYMENT  
 LETTER  
 FROM should be  
 paid; otherwise  
 payment will be  
 required.

# WESTERN UNION

1206

A. N. WILLIAMS  
PRESIDENT

NEWCOMB CARLTON  
CHAIRMAN OF THE BOARD

J. C. WILLEVER  
FIRST VICE-PRESIDENT

CHECK
ACCOUNTING INFORMATION
TIME FILED

and the following telegram, subject to the terms on back hereof, which are hereby agreed to

1944, FEB. 17

## TO OUR CUSTOMERS:

CONTINUING OUR SURVEY OF THE PRACTICES, CONDITIONS AND PROCEDURES THAT HAVE BEEN EXISTENT IN THE WIRE AND CABLE INDUSTRY OVER A PERIOD OF YEARS, WE ARE SATISFIED THAT THE ELIMINATION OF SOME OF THESE POLICIES CANNOT HELP BUT RESULT IN SUBSTANTIAL BENEFITS TO ALL BRANCHES OF THE ELECTRICAL INDUSTRY, TO ALL CUSTOMERS AND TO THE GENERAL PUBLIC. AS OUR STUDIES DEVELOP THE NEED FOR CORRECTIVE MEASURES, WE WILL, IN LINE WITH OUR CONSISTENT POLICY, PROMPTLY INSTITUTE SUCH CHANGES AS EXPERIENCE AND CONSIDERED OPINION WARRANT.

AT THIS TIME WE FEEL IT INCUMBENT UPON US TO ASSUME "CLEARANCE OF THE DECKS" IN RESPECT TO REELS, SPOOLS AND CASES WHICH ARE USED FOR THE SHIPMENT OF PRODUCTS OF OUR MANUFACTURE.

EFFECTIVE MARCH 1, ALL GENERAL CABLE CORPORATION CONTAINERS WILL BE SHIPPED ON A "NO CHARGE" BASIS AND NO PAYMENT OR DEPOSIT WILL BE REQUIRED.

WE HAVE CONFIDENCE THAT OPERATION OF THIS PLAN WILL RECEIVE THE SUPPORT AND COOPERATION OF ALL PARTIES AT INTEREST, ELIMINATING AS IT DOES THE PRESENT COSTLY AND MANPOWER-CONSUMING METHOD OF HANDLING CONTAINERS. IT IS REQUESTED THAT ALL GENERAL CABLE CORPORATION RETURNABLE TYPE CONTAINERS BE RETURNED PROMPTLY, FREIGHT COLLECT.

WE WILL ALLOW CREDIT FOR THE RETURN OF ALL CONTAINERS YOU HAVE BEEN BILLED FOR AS CONTAINERS AND WHICH YOU HAVE PAID FOR, PROVIDED THEY ARE RETURNED IN GOOD CONDITION ON OR BEFORE FEBRUARY 28, 1945. AFTER THAT DATE, NO CREDIT WILL BE ALLOWED FOR THE RETURN OF CONTAINERS.

THE COOPERATIVE EFFORT OF ALL CONCERNED WILL DETERMINE THE EFFECTIVENESS OF OUR POLICY AND OF OUR ABILITY TO CONTINUE IT.

GENERAL CABLE CORPORATION....

C O R P O R A T I O N



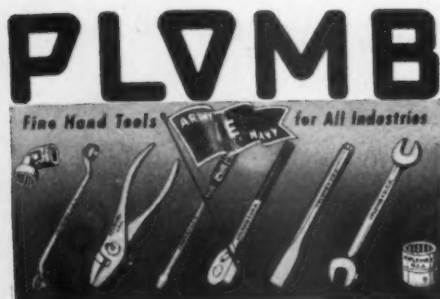


**...expert mechanics choose these small tools to help speed war production**

Midget Plomb tools work like magic on small precise jobs because:

1. They are designed to give maximum service in minimum space—work better.
2. They are strong and accurate—safer to use.
3. They are built to highest quality standards — last longer.

You'll find these things true of all other hand tools in the complete Plomb line—famous in all industries for better, safer, longer-lasting service. Call the friendly Plomb dealer near you to get the Plomb tools you need for your war job.—Plomb Tool Co., Los Angeles 54, California.



## Utility Buyers Convene

(Continued from page 304)

change in the assignment of preference ratings in order to avoid the record-keeping that has been required by compliance with the former "split rating" provisions, and provides the following rules for obtaining materials (other than controlled materials) for U-1 purposes: The AA-1 preference rating is to be used for (a) all material except that included in the "transmission and distribution" class of material, and (b) material in the "transmission and distribution" class required to take care of an actual or imminent breakdown of facilities.

Preference rating AA-3 is to be used for all material in the "transmission and distribution" class except when the AA-1 rating is needed to assure prompt deliveries for repairs. In the case of electric utilities, wood poles and cross arms are considered a part of transmission and distribution material.

It is made clear that material obtained with the AA-3 rating assigned by the order or by a specific assignment of preference rating such as on Form WPB-2774 may be used for AA-1 purposes. Conversely, non-controlled materials in inventory acquired by the use of the AA-1 rating may be used for purposes for which an AA-3 rating has been assigned whether assigned by U-1 or by a WPB-2774 approval. However, if it becomes necessary to replace such material in inventory, the AA-3 rating must be used to replace it, or, at the

utility's option, the AA-3 rating may be used to replace an equivalent dollar value of non-controlled materials in the same class. Controlled material acquired with the use of the allotment symbol U-9 of Order U-1 may be used on a construction job for which a specific allotment of such controlled material has been made.

At the final session, which was presided over by Russell Wenz, J. L. Bates of the Central Power & Light Company, Corpus Christi, Texas, read a paper by H. K. Doyle, Operation Superintendent, Dallas Power & Light Co., Dallas, Tex., on "Operating Management Looks at Purchasing and Stores."

Mr. Doyle's paper reviewed the successful functioning of the Purchasing Department in controlling stores inventory, a responsibility that had been given to it subsequent to the issuance of Utility Order P-46 with its restrictions on both the purchase and utilization of materials.

After having finished reading Mr. Doyle's paper, Mr. Bates said, "We in the Operating Department have come to appreciate what the Purchasing men can do to lighten our load. And I predict that you will have the opportunity to render an even more valuable service after the war."

The session was concluded with a talk by George Sutherland, General Stores Manager, Consolidated Edison Company of New York, on "Consolidated Edison Stock Control System." The forms exhibited by Mr. Sutherland and his explanation of their use, will be presented in a future issue of PURCHASING.

1 1 1

## ASU Time Cycle Chart

(Continued from page 113)

three weeks longer. Therefore, in order to be assured magnesium forging deliveries, contractors should file Form WPB-3462 at least three weeks prior to the closing filing date.

The influence of delay factors in extending the procurement cycle must be considered continuously, and the time cycles shown on the charts are not to be interpreted as the exact time necessary to produce any magnesium alloy product. Most common among the delay factors are backlogs of orders and die or machine breakage.

With regard to castings, the timely

procurement and dimensional acceptance of pattern equipment has continued to be a basic problem. Delays from this cause can only be averted by the allowance of an ample time margin.

Now that the light metal ingot picture is considerably improved, there is an increasing tendency for materials consumers to allow their purchase planning to become lax. Late ordering has been one of the most important causes of materials shortages in the past, and remedial action must be taken to prevent its becoming an even greater bottleneck in an expanding aircraft program. The Magnesium Sub-Unit of the Materials Distribution Branch at

(Continued on page 310)

*Making strong the things that make America strong*



## Holding a Ship's Shape ... Shaping a Stove's Course

THAT SHIP . . . defying a rough-and-tumble fighting ocean . . . needs stiff-willed stamina in the bolts and nuts that secure its ribs.

That stove . . . built on a fast-moving production schedule . . . needs bolts and nuts that are quick on the get-away and take tightening without fumbling or jamming.

For fastening strength that will resist whatever beating a ship or steam-shovel or stone-crusher can give . . . for accurate

fastening that hurries a product along an assembly line: fasten with RB&W bolts and nuts.

RB&W developments in cold-forming and cold-punching have set new standards in holding power, accuracy and appearance for all kinds of fastening devices.

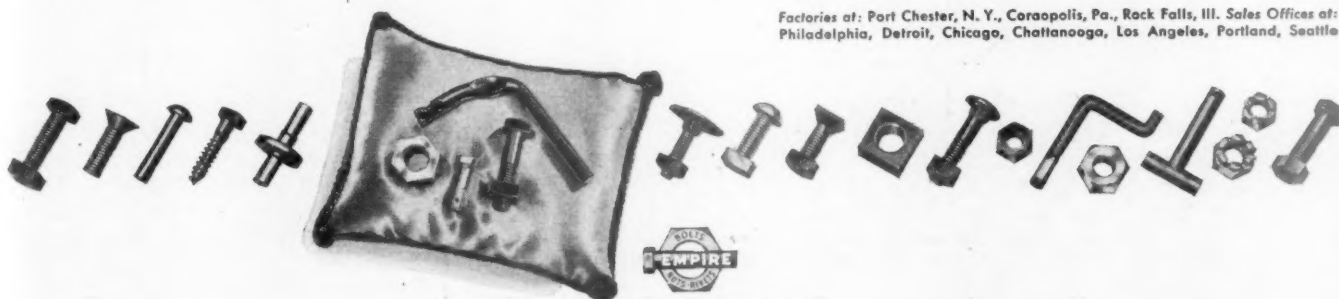
The dependability you would expect from the accumulated experience of 99 years and the results of hundreds of thousands of dollars' worth of research work . . . is wrapped up with every shipment

of RB&W products. Little wonder that so much of the best-known farm machinery, transportation equipment, electrical appliances, construction equipment and furniture is put together faster and held together better by RB&W fasteners.

# RB&W

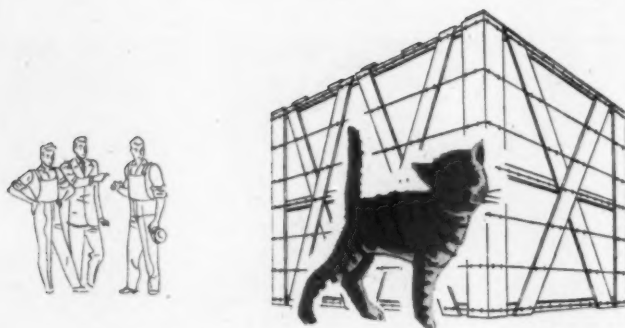
**RUSSELL, BURDSALL & WARD  
BOLT AND NUT COMPANY**

Factories at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill. Sales Offices at: Philadelphia, Detroit, Chicago, Chattanooga, Los Angeles, Portland, Seattle



AND ALLIED FASTENING DEVICES SINCE 1845





*"What do they mean—  
there's more than one way to skin a cat?"*

**D**ON'T worry, Kitty, they're not talking about you. They're talking about ways to improve and to reduce the cost of their postwar products. And they know that the use of engineered shipping containers is one way of doing it.

"Just boxes" are a thing of the past. Shipping containers are no longer "just boxes." Today, they perform many *extra* services.

**THE CONTAINER ON THE PRODUCTION LINE:** This is but one of the many ways in which a General Wirebound crate speeds production, saves assembly time and reduces cost.

The bottom of the crate, on which the base of the product is placed, is used as a skid on roller conveyors. At the end of the production line, a "mat" (the common name for the one-piece up-

*Properly designed and made, containers become part of the product. Frequently, they save time and money on the production line. Often, they reduce the delivered cost of the product. Many times, they simplify both packing and unpacking.*

Perhaps General Box containers can serve you, too. It's easy to find out. Just write for complete information today.

right section which is folded to make the four sides) is placed around the product and the base of the crate. The top of crate is simply and easily put in place and the finished product is ready for shipment.

*Today, military and vital civilian container problems are adding to General Box Company's "know how" which may also be helpful to you tomorrow.*

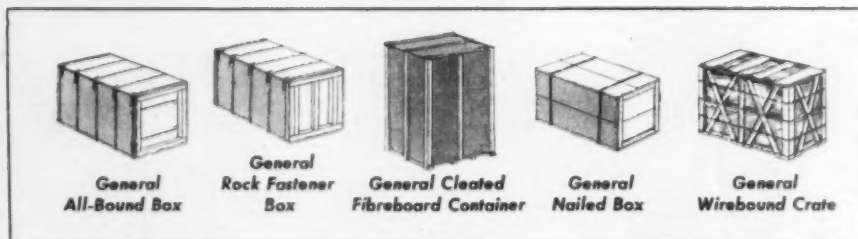
## General BOX COMPANY

**GENERAL OFFICES:** 48 West Illinois Street, Chicago, Ill.

**DISTRICT OFFICES AND PLANTS:** Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, New Orleans, Sheboygan, Winchendon.

Continental Box Company, Inc.: Houston, Dallas.

### ENGINEERED SHIPPING CONTAINERS:



## ASU Time Cycle Chart

(Continued from page 308)

Wright Field, operating as a service organization for ASU, is prepared to assist contractors in obtaining delivery of critical magnesium products, but manufacturers can forestall their own shortages by taking into account the time cycles and delay factors in placing their orders.

Manufacturers desiring copies of the time cycle charts may secure them by writing to the Aircraft Scheduling Unit at Wright Field, Dayton, Ohio.

## Team Work Keeps Materials Moving

(Continued from page 114)

sponsible for specific projects.

This represents a fairly complete cross-section of people concerned with material flow inside our plant. If we depended upon the usual laws that govern human relationship within one roof, these people would see each other hurriedly and each would interest himself or herself solely in his or in her individual function.

*But we run semi-monthly meetings for each project!*

These meetings are informal. The Project Purchasing Agent, the Production Planning Manager, the Storeroom Supervisor, the Project Stores clerk, the Production Material Expediter, the perpetual inventory clerk, are all invited. All problems attendant to that project are fully discussed. Each person's opinion carries weight. The chairman is either the Production Planning Manager or the Project Purchasing Agent. Spoilages are analyzed, material flow smoothed, better storage discussed, and all the many, many factors pursuant to good operation combed thoroughly.

The greatest success engendered by these meetings lies primarily in the bond that is joined among all those whose efforts are convergent. A team of personnel is formed from a group of disinterested individuals. The problems of every one are made the problem of all. And it is revelatory how much the stores clerk can help the Project Purchasing Agent, and how much the Purchasing Agent can aid the Production Material Expediter, and how much the Production Planning Manager can learn.

(Continued on page 312)





***BACK OF EVERY ATTACK...***

## ***Preformed wire rope***

Men who land on enemy beachheads—under fire—need every protection. Speed and safety are at a premium. That's why slings that handle landing barges are made of Preformed wire rope.

Every day men trust their lives and their precious matériel to Preformed wire rope. On practically every kind of mobile equipment, Preformed is proving that it's the

tough wire rope for the tough war jobs.

Fighting men are learning what American industry has known for many years—that Preformed wire rope handles easier, lasts longer, steadies production, saves time, safeguards men and equipment.

That's why, back of every attack, Preformed wire rope is hard at work on all kinds of fighting jobs.

ASK YOUR OWN WIRE ROPE MANUFACTURER OR SUPPLIER FOR PREFORMED WIRE ROPE

## V-DAY NOTES ON CLEANING FOR BUSY PURCHASING AGENTS

### ... Putting New IDEAS to Work

**W**HEN THE TIME COMES to change over to peacetime goods, keep in mind that there is an easy way to take advantage of NEW Oakite developments and materials . . . of the new IDEAS and techniques in cleaning and degreasing, many of which have heretofore been restricted for exclusive use in war plants.

#### Grounded in Practical Experience

Whatever products you manufacture now or when V-Day comes, you will find the suggestions and ideas that Oakite Technical Service Representatives are ready to submit, are grounded in years of practical experience. Invariably they lead to increased efficiency,

smoother running production, low unit costs.

#### Oakite Advisory Service Is Free

Somewhere near you is one of our Service Representatives. Find out from him what ideas he may have which you can apply that will be helpful when specifying or purchasing cleaning and degreasing materials. Problems and inquiries invited. Won't you write us today?

**OAKITE PRODUCTS, INC.**  
54 Thames St., NEW YORK 6, N. Y.  
Technical Service Representatives Located in All  
Principal Cities of the United States and Canada

**OAKITE**  
*Specialized*  
**CLEANING**  
MATERIALS...METHODS  
SERVICE

*Buy Bonds for Victory!*

**SIMONDS**  
*Since 1892*  
for  
**GEARS** 

**SIMONDS** — known for over half a century for **QUALITY GEARS**. All types; cast and forged — steel, gray iron, bronze; also silent steel, rawhide and bakelite. Also made to your specifications.

*Distributors for*  
**Ramsey Silent Chain Drives and Couplings**

**THE**  
**SIMONDS GEAR & MFG. CO.**  
25th and Liberty Sts.  
PITTSBURGH, PA.

*Check in*

*In Cleveland*  
*it's the*  
**HOTEL HOLLENDEN**  
*In Columbus*  
*it's the*  
**NEIL HOUSE**



*OTHER DeWITT HOTELS:*  
**THE LANCASTER**  
*Lancaster, Ohio*  
**THE BARON STEUBEN**  
*Corning, N. Y.*

## Team Work Keeps Materials Moving

(Continued from page 310)

These meetings have been of downright, practical value. Spoilage has gone down. Mishandling of material is a rarity. Accurate and knowledgeable record-keeping are the order of the day.

The message given by Sir Bernard L. Montgomery, former commander of the British Eighth Army, in his farewell to his troops in Italy might be apropos:

"Since I have commanded this Army, I have never once issued a written order to my subordinate Generals about operations. Command must be personal and it must be verbal; otherwise it will have no success, because it is wrapped up in the human factor."

With the modest air of a mouse that looks at a mountain from the valley, we heartily concur with the General.

1 1 1

## Post-War Potentials

(Continued from page 111)

counteracted. The subject is a large one and the scope of our report is limited.

So that our Association will not be considered as advocating undue sectionalism in buying policies, we conclude by stating our position on the subject. Products of other sections will always be required in quantity in the Southeast and will continue to be given fair consideration on their merit by the industrial and institutional buyers. We must market a portion of our production in other sections. The individual buyer and his associates in the business enterprise or institution must forever be the selectors of sources of supply in the instances of individual purchase transactions. On the other hand, it is good business for the buyer to give reasonable consideration to close sources of supply, as such close-by sources frequently involve economies in cost and storage and are otherwise advantageous to the buyer. The development of a better balanced economy will reflect benefits to many of our Southern enterprises and their personnel, and a reasonably industrialized South will be a better customer of other sections and will strengthen our national position.



# "WEARPROOF" with *Firthite*... if your work, machines, or equipment involves **ABRASION**



Extraordinary resistance to "wear and tear" (whether from abrasion, corrosion, or heat) is the outstanding quality of **FIRTHITE Sintered Carbide**. Its intense hardness, rigidity, and stability make it the **BEST** material for long life under extremely severe service conditions. A **FIRTHITE** insert will outlast hardened steel, chrome plating, nitriding, or hard facing—many times over. Insert **FIRTHITE** at the point of greatest wear!

Please furnish this information when you request quotation on **FIRTHITE** wear-resistant parts:

IF YOU WANT to eliminate product rejections by maintaining accuracy . . . reduce maintenance of machines and equipment and thereby cut costs . . . minimize replacement of parts and thus save time and materials—**THEN SEND US** full particulars of your present equipment and process, including working drawings and samples of blank and part to be produced.

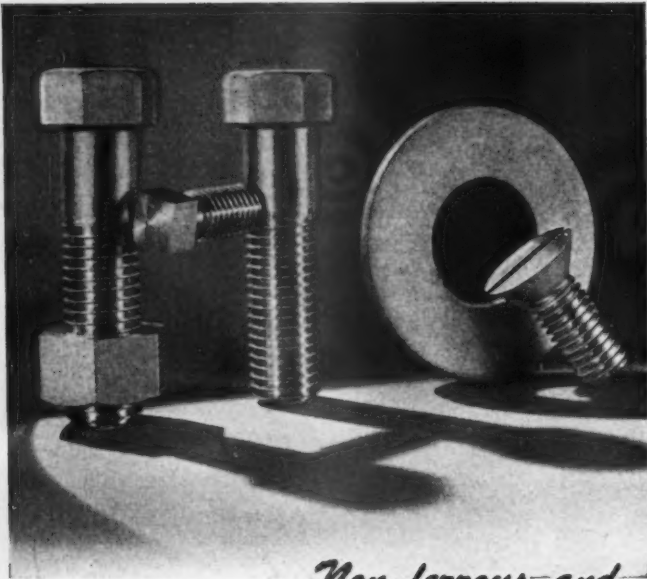


**Firth-Sterling**  
STEEL COMPANY

Offices: McKeesport, PA. NEW YORK - HARTFORD - PHILADELPHIA - CLEVELAND - DAYTON - DETROIT - CHICAGO - LOS ANGELES

Makers of High-Speed Steels, Tool and Die Steels, and Sintered Carbides





*Non-ferrous and  
Stainless FASTENING*

# Headquarters

HEADQUARTERS is "a chief place of business." So . . . when you need non-ferrous and stainless fastenings, come to Harpers . . . the organization which specializes on the manufacture of bolts, nuts, screws, washers, rivets and specials made of Brass, Bronze, Copper, Everdur, Monel and Stainless . . . an organization not concerned with common steel fastenings.

To serve fastening users, Harper stocks over 4280 different items . . . employs a large staff of engineers and field service men . . . and offers a vast fund of practical non-ferrous and stainless fastening "Know how." Sample this "Know how" by writing (on your letterhead) for a four-color, 84 page catalog.

**THE H. M. HARPER COMPANY**  
2606 Fletcher Street, Chicago 18, Ill.

BRANCH OFFICES:  
New York City • Philadelphia • Los Angeles  
Milwaukee • Cincinnati • Houston  
Representatives in Principal Cities

**BRASS  
BRONZE  
COPPER  
EVERDUR  
MONEL  
STAINLESS**

**HARPER**  
EVERLASTING FASTENINGS



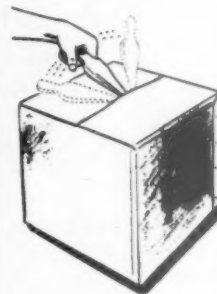
## A GRAVE PROBLEM

**Container Production Running Behind Orders**

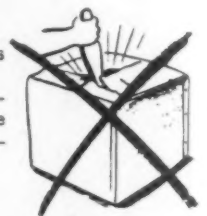
**C**ONTAINER production for 1944 presents a grave problem. Production of corrugated and fibre-board containers is running behind orders; demand for wood containers is 25 percent ahead of supply; demand for glass jars is running about 30 percent above the industry's maximum capacity; critical materials for metal containers are extremely limited; burlap shortage limits the supply of textile bags.

Again the Containers Division of WPB emphasized the importance of greater container re-use. Industry has responded willingly to WPB's repeated requests for more and more conservation. But there is no let-up in sight, and more than a billion containers will be required in 1944 for our Armed Forces and Lend-Lease. Only by the most economical use of containers will it be possible to keep merchandise on the home front moving.

Evidences of industry cooperation are extremely reassuring. A chewing gum manufacturer recently reported that since the inception of the Container Re-use Program late in September 31,834 containers have been returned to his firm of which 30,447 were in good usable condition. The balance, representing 4.1 percent,



This is the simple wooden paddle that is opening thousands of paperboard containers without damage. It can be made in your own maintenance department or carpenter shop.



were not suitable for re-use but were turned over to a paper mill for reprocessing. This manufacturer, who has supplied a wooden paddle to each of his customers to minimize damage in opening, reports that he expects even better returns in the near future. One meat packer reconditions and re-uses 2,000 wooden barrels every day. A big printing company is re-using containers on an average of 4 times.

In instructions to container users, WPB explained the best methods for keeping containers in circulation. It is recognized that the problem of each manufacturer, jobber, wholesaler, mail-order house and department store differs, but dealers are urged to try the simplest method first. A direct agreement between customer and supplier is often the solution. The following methods by which containers are returned to original shipper are offered as suggestions:

### Ways to Conserve

If any part of distribution stays within one or two organizations, shipping containers can be returned to the original shipper by . . . (1) simple agreement between manufacturers . . . (2) passage of containers from manufacturer through branch houses to retailers and back . . . (3) shipment from manufacturer through salesmen to retailer and back through the same channels.

If distribution is not controlled by original shipper, a large proportion of containers can still flow back. (1) When the normal passage of goods carries containers from manufacturers through chain store ware-

(Continued on page 316)

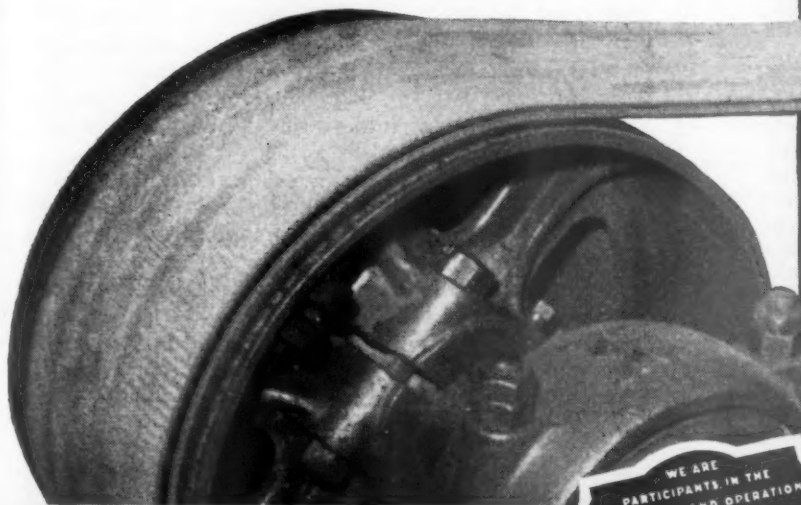
# Nearby Matériel Base for RUBBER

**W**orld War II has drawn a parallel between successful military and wartime industrial activities—the advantages of bases close by the field of operations and the necessity of active supply lines. Mill supply distributors provide these bases for American industry and help maintain lines of supply from factory to industrial user.

Republic Rubber Distributors, located in every section of the United States, keep stocks and furnish valuable supply and maintenance service wherever rubber hose, belting, packing and other mechanical rubber products are used. Close factory and technical cooperation with Republic augments the services your Republic Distributor has to offer. Consult with him confidently on your requirements for mechanical rubber products.



*See your Republic Distributor*



WE ARE  
PARTICIPANTS IN THE  
OWNERSHIP AND OPERATION  
OF  
NATIONAL SYNTHETIC RUBBER  
CORPORATION

## REPUBLIC RUBBER

YOUNGSTOWN

1 • • OHIO

HOSE • BELTING • MOLDED GOODS

PACKING • EXTRUDED PRODUCTS

DIVISION OF

**LEE RUBBER & TIRE CORPORATION**



# famco

## Announces

### A BRAND NEW LINE OF FOOT-POWERED SQUARING SHEARS



#### MADE IN FIVE SIZES

Famco proudly presents a new, highly efficient, foot-powered squaring shear . . . the result of many months of designing, engineering and testing . . . available in 22", 30", 36", 42" and 52" cutting widths.

● If you need a squaring shear, it will pay you to investigate the latest thing on the market. Famco has developed a new, low cost, foot-operated (motorless) machine that's extremely powerful . . . will cut up to 18 gauge mild steel.

This machine is ruggedly built of semi-steel, accurately machined. The cross-head is reinforced with a steel tie rod for proper knife alignment and accurate shearing. Compressing springs are encased to practically eliminate their breakage. Knives have tool steel cutting edges.

Fast, accurate depth setting is accomplished with back gauges moved on heavy support rods by means of graduated racks and pinions. All models are equipped with front, back and side gauges. The "hold-down" attachment is furnished with the 36", 42" and 52" sizes.

● Write for information and prices on this inexpensive, efficient new line of shearing machines.

#### FAMCO MACHINE COMPANY

1313 EIGHTEENTH STREET

RACINE, WISCONSIN



Famco builds 32 models of bench and floor type arbor presses that deliver from 1/2 to 15 tons pressure.

Famco Foot Presses are made in 10 sizes, for bench or stand mounting . . . save cost of power presses.



# famco

ARBOR PRESSES • FOOT PRESSES • SQUARING SHEARS

(Continued from page 314)

houses to chain stores, containers can be returned by the same route. (2) The same applies when goods are moved from manufacturer through wholesalers or jobbers to retailers.

If containers can't be returned to original shipper, they can probably be used by recipient in making shipments to his own customers. This is one of the most important conservation measures.

Whenever possible, container users are urged to order fewer and larger containers. Unless interior packing is essential to protection of the product it should be eliminated.

Examination of container inventories frequently reveals containers that are obsolete. These should be put into circulation,—used or sold.

When usual methods do not meet your problem, contact second-hand container dealers in your locality. Remember there is a dealer who buys and sells every type of reusable container.

If you have used containers to sell, or need used containers you can't find, advertise in trade papers and house organs.

If your method of handling the container problems has proved successful, the WPB Containers Division would like to know about it. The information will be passed along to others so still more containers can be saved.

1 1 1

## WAR CONSTRUCTION NEARS END

### Corps of Engineers Compiles Huge Backlog of Post-War Projects

**A**T the beginning of 1944, the Corps of Engineers, Army Service Forces had \$172,000,000 of construction work remaining to be completed out of an eleven billion dollar war program begun in June, 1940.

Designed to provide the Army with troop housing, training facilities, and industrial plants, the huge construction program reached its peak intensity last summer. One hundred and eighty-seven major projects, involving estimated expenditures of \$112,000,000, comprise the bulk of the total yet to be completed. The remaining \$60,000,000 will be required to complete 2,283 jobs classed as minor; that is, costing less than \$500,000 each.

Though most of the larger projects will have been completed by the end of March, and practically all presently authorized construction will be in place by the end of June, 1944, a certain amount of routine war construction is anticipated as long as the war continues, due to changing military requirements. An Army airfield designed for pursuit or light bombardment planes, for instance, might be needed to base heavy bombardment; and the conversion would require modification and strengthening of the parking aprons, taxiways, and runways.

The downward trend of new construction, however, is indicated in the dollar volume of work authorized during December, 1943—only 12% of that authorized in the first month of 1943. Barring serious military reverses, the prospects are for a continuation of the downward trend.

Construction incidental to the maintenance and repair of Army installations is estimated at \$98,000,000 for the current fiscal year. Included in this budget are items of new construction involving less than \$1,000 apiece.

Approximately 1100 Army posts and sub-posts have

(Continued on page 320)



# **QUICK ACTION!**

## **for all Industrial Buyers who USE PLANT-PRODUCTION DIRECTORY**



Official U. S. Navy Photo

Today—when time is so precious—it's only natural that busy industrial executives requiring buying information seek the simplest, **QUICKEST** solution to this everyday problem. Because **PLANT-PRODUCTION DIRECTORY** is streamlined and tabbed for ready-reference . . . because it has no duplicate listings . . . nor useless classifications . . . because it is "tailor-made" to meet the specific requirements of industry—**IT DOES ASSURE QUICKER ACTION** on all where-to-buy-it data.

**PLANT-PRODUCTION DIRECTORY** is truly a

valuable directory. Not only is it designed to "speed-up" and simplify the securing of any required buying information on plant equipment or supplies for production and maintenance, but it's **RELIABLE . . .** and it's **COMPLETE**. Busy executives everywhere agree it is the most effective, *quickest* medium of buying information now available. So take immediate **ACTION** and see that the **PLANT-PRODUCTION DIRECTORY** now available in your office serves its rightful purpose. Use this *streamlined* buying guide once . . . and you'll never be without it!



the Lightweight  
Directory



with a  
Heavyweight  
Punch

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*Industry's Buying Guide*

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**PLANT-PRODUCTION DIRECTORY 333 NORTH MICHIGAN AVENUE, CHICAGO 1, ILLINOIS**

# THE CENTRAL *Certified Accuracy* MICROMETER

*Immediate  
Delivery*

All sizes from one inch to six inches available for immediate delivery from stock.

Central Certified Accuracy Micrometers May Be Purchased singly or in de luxe sets. Write for illustrated catalog.

**THE CENTRAL TOOL CO.**

MICROMETERS OF CERTIFIED ACCURACY  
AUBURN . . . RHODE ISLAND



## FINE DIAMONDS

Since 1912 we have been direct importers of fine diamonds. Our values are outstanding. Selections sent for inspection without obligation.



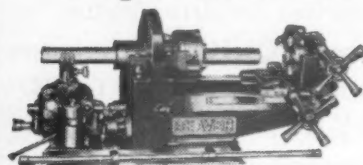
**L. & C. MAYERS CO.**

ESTABLISHED 1912

Importers of Diamonds and Watches  
Distributors of Jewelry, Silverware,  
Luggage and Giftwares

545 FIFTH AVENUE  
NEW YORK

## The A-B-C of Pipe and Bolt Machines

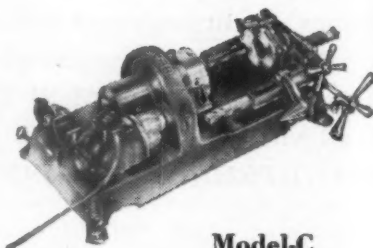


**Model-A**

A high-speed heavy-duty deluxe Pipe and Bolt Machine. Range  $\frac{1}{4}$  to 2-inch—up to 12-inch with geared tools and drive shaft. Bolts,  $\frac{1}{4}$  to 2-inch. Wt. 415 lbs. Ask for Bulletin-A.

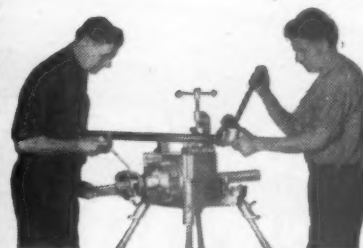
**Model-B**

A compact utility Pipe and Bolt Machine combining many features of Model-A with the easy portability of Model-C. Range  $\frac{1}{4}$  to 2-inch—up to 8-inch with drive shaft and geared tools. Bolts up to  $1\frac{1}{2}$ -inch. Weight 280 lbs. Ask for Bulletin-B.



**Model-C**

A sturdy little Power Unit Converts Hand Pipe Tools into Power Tools from  $\frac{1}{4}$  to 8-inches. Threads 8-inch in 6 minutes. Threads bolts up to  $1\frac{1}{2}$ -inch. Equipped with automatic chuck wrench ejector—a safety feature. Two men can use it at the same time without interference. Easily portable—weighs about 150 lbs. Write for Bulletin-C.



Also a complete line of hand tools.

**BEAVER PIPE TOOLS**

344 GROW AVE., WARREN, O.

# Brevity is the Soul of Wit—

## WHEN IT COMES TO

# Conserving Paper

**S**URE IT'S EASIER to let your dictation roll along. Sure it's easier to write long copy. Sure it's easier to do all the good, pleasant things of normal peacetime business when paper is like water, something you can pretty well use as you will.

But now, when the increasing paper needs of the armed services daily decrease the national supply of paper—when paper is a true war essential—that's a different story.

All of us in business must watch every piece of paper or paper board we use. We must judge its use in terms of absolute necessity. We must not use a single piece, a single inch, of paper which thriftier writing or printing or packaging can possibly save.

For multiplied on a national scale, that particular piece or inch of paper or paper board becomes the tonnage needed by our service forces to ship precious food and ammunition and weapons and medical supplies and blood plasma to our troops overseas.

*If there's no Paper Conservation Committee in your organization or in your community, why not get one going today?*

This advertisement prepared under the auspices of the War Advertising Council in co-operation with the Office of War Information and the War Production Board.

### USE LESS PAPER BECAUSE

It takes 25 tons of blueprint paper to make a battleship.

700,000 different kind of items are shipped to the Army—and they're paper-wrapped or boxed.

"K" ration containers, shipped from the Eastern Seaboard alone, take 662 pounds of paper a month.

Each Signal Corps radio set takes 7 pounds of kraft paper, 3 pounds of book paper.

Each propelling charge for 155-millimeter shell takes 3/5 pound of paper.

### USE LESS PAPER THESE WAYS

Review all printed forms periodically for essentiality; consolidation; elimination of waste space; standardization of sizes, weights, color, grade; elimination of color where possible.

Eliminate slack fills, thus effecting the economies of a smaller package.

Use 8½x5½-inch letterheads for short letters; inclose them in small envelopes.

Adjust the number of units per case to the maximum practical.

Use and re-use carbon paper consistently.

Conversely, reduce the number of units to utilize lighter carton board when such reduction will result in less tonnage over-all. Be sure that the openings are on the smallest dimension of the shipping container, so that the flaps will have the smallest area possible.

# LET'S ALL USE LESS PAPER





When we are finished with present government contracts sufficient canvas may be allotted us to make up certain urgent civilian requirements. There will not be enough for many normal stock items.

### THE FIRMS THAT TELL US FIRST WILL GET THE CANVAS

Notify us NOW what canvas items you will need most. Those will be the ones we will make up FIRST. Normally we process "everything in canvas." Temporarily we will have to concentrate on those most urgently needed by firms like yours.



**FOSTER MANUFACTURING CO.**  
430 NOTRE DAME ST., NEW ORLEANS-6-LA.

(Continued from page 316)

been constructed by the Corps of Engineers during the war. For those not required in peacetime, a program of demolition is anticipated. A shortage of lumber and other building materials in demand for post-war construction, will necessitate such a salvage program.

In its civil works program, the Corps of Engineers is compiling a backlog of potential post-war river and harbor, flood control and multiple-purpose heavy construction projects totalling \$4,500,000,000. \$160,000,000 of this total is included in projects already authorized but deferred to save manpower, equipment, and materials. The remainder of the backlog includes projects approved by Congress and projects recommended to Congress, both contingent upon Congressional appropriation.

1 1 1

### SCRAP IS A MUST

**Round-the-World War Needs  
Continuous Scrap Support**

**S**UPPLY aides to the chieftains in charge of Allied invasion plans are looking anxiously to the nation's iron and steel scrap piles for continued production support to augment invasion thrusts. The supply of emergency supplements of new specialized implements of war brought about by invasion plans may bog down, they fear, if scrap supplies continue to shrink below their present level.

The need for steel in new guises: for landing mats, for heavy construction equipment, and for installations on new bases and bridgeheads, are among today's most

(Continued on page 323)

When you buy screw machine products, do you want them as nearly perfect as up-to-the-minute machines and methods can make them? Of course, but you want them that way all the time. In the screw machine product business that calls for EXPERIENCE. This "Newton" has gained through long years of service to leading manufacturers of appliances, instruments, novelties and other products. Offered also is a special experience in working aluminum. Send us your requests for estimate on screw machine products in all metals up to 1 1/4" size.

**NEWTON SCREW MACHINE PRODUCTS**  
THE NEWTON MANUFACTURING CO., PLAINVILLE, CONN.

**ACCURATE REPRODUCTION**



...with Matthews  
*Safe-Hed® - Tuf-Face®*  
**STEEL STAMPS & MARKING DIES**

Trade marks . . . trade names . . . special lettering or designs . . . accurately reproduced in Matthews dies and stamps . . . for marking all types of industrial products. Stamps and dies furnished for hand stamping, or for use in presses or marking machines.

\*REG. U.S. PAT. OFF.

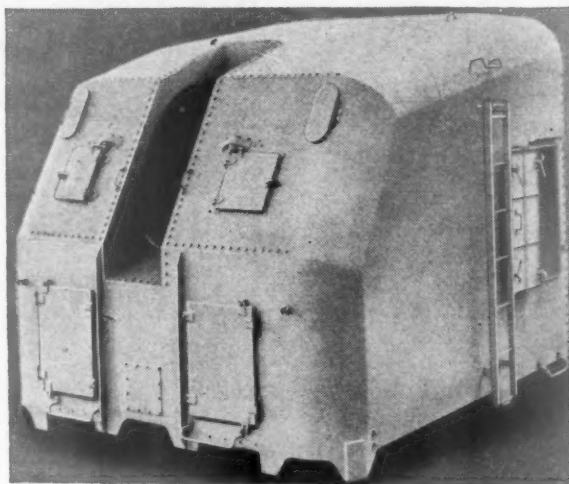
Write for Catalogs 146-A and 146-B

**JAS. H. MATTHEWS & CO.**



3959 Forbes Street Pittsburgh 13 Pa.  
Branch Plants  
New York, Boston, Chicago, Philadelphia, Newark, Syracuse  
District Sales Offices  
Cleveland Detroit Hartford Birmingham

**GUN TURRETS** built of heavy armor plate, for use aboard United States Navy vessels . . . fabricated on Brandt Assembly lines.



Heavy Plate  
or Light Sheet—

Call  
**BRANDT**  
of Baltimore

*for Precision in Heavy Plate  
and Sheet Steel Work*

Here is an 8½ acre plant . . . with the most modern equipment for shearing, rolling, forming, welding and completely fabricating ferrous, non-ferrous and alloy metals to your specifications . . . from the lightest gauge up to and including 1¼" mild steel or ¾" armor plate. Extensive war contracts necessarily limit our present acceptance of new business for immediate delivery. Charles T. Brandt, Inc., Baltimore-30, Maryland.



BRANDT of Baltimore—Craftsmen in Metal Since 1890

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ENLARGED FOR DETAIL

BLUE PRINT

FOR VICTORY  
BUY UNITED STATES WAR BONDS AND STAMPS

Ask for design help. Item illustrated is a "special," of which no samples are available.

Special heads, threads, and finishes—on fastenings of any metal or alloy adapted to cold-upset—are Progressive's specialty. Weekly output: 25,000,000.

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For general industrial use where non-flammable or moderately flammable solvents are indicated. Powerful, highly effective solvents for fats, waxes, oils and other organic material distilled from extracted residues.

	Boiling Range, °C.	Lbs. per gal.
Methylene Chloride (Dichloromethane)	39.3-40.1	11.08
Chloroform, U.S.P. & Technical	60.4-61.4	12.43
Carbon Tetrachloride, U.S.P. & Technical	75.2-76.1	13.31
Trichlorethylene	86.5-87.5	12.30
Perchlorethylene (Tetrachlorethylene)	120.5-122.0	13.55
Tetrachlorethane (Acetylene Tetrachloride)	146.3*	13.31
Pentachlorethane	161.9*	14.00

\*Approximate boiling point

At present, these solvents, with some exceptions, are restricted to war uses. Limited amounts, however, are available for research. For full details, consult our nearest district office:

Baltimore, Boston, Charlotte, Chicago, Cleveland, Kansas City, New York, Philadelphia, San Francisco. Or write direct to: E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

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**YOU RECEIVE  
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EXPERIENCE  
IN EVERY GITS OILER**

The Gits Line of Oilers, Oil Seals and Lubricating Devices has served extensively on every front in our war effort and is prepared to provide positive, dependable lubrication to meet every known industrial and civilian requirement after the peace is won.

Write for  
Catalog No. 60

**GITS BROS. MFG. CO.**

1865 South Kilbourn Avenue • Chicago 23, Illinois

*Exclusive for over 30 years*



(Continued from page 320)

acute production needs, according to the War Department.

Because troop movements overseas have at last begun to exceed the rate of men inducted into the armed services, the added burden of feeding, housing, arming and supplying these new forces means a lengthening of Allied supply lines and a sharp increase in the number of heavy duty trucks and other transportation equipment, the report pointed out.

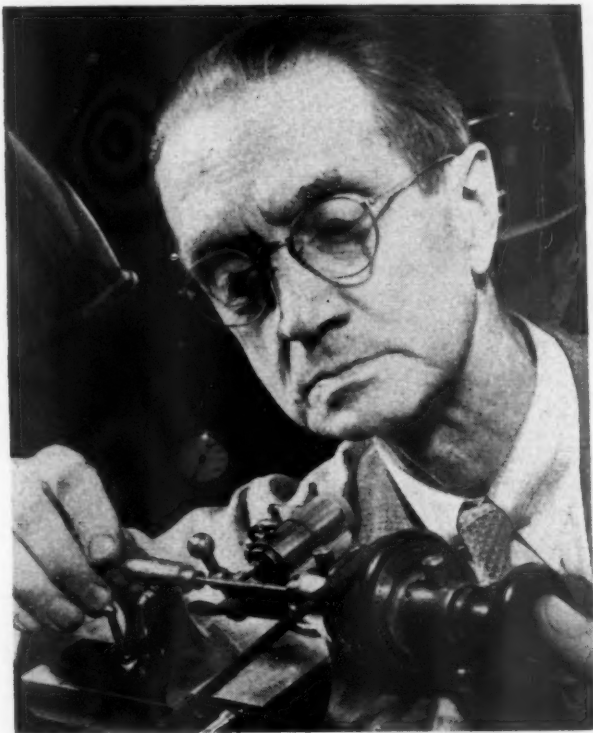
"As supply lines grow longer, the problem of 'getting there fustest with the mostest' gets tougher," the War Department spokesman said. "Where it took a shipment of 50 landing barges to the South Pacific, it now takes that initial 50 plus an additional 50 to back that up as insurance that at least 50 will get there safely," he went on. "Scrap—and more scrap—for steel is the answer," he declared.

## ONE-MAN WAR PLANT

### Jeweler Becomes Subcontractor

**B**EHIND the door of a small jewelry shop in Lima, Ohio a one-man war plant is meeting and beating all production schedules as it turns out Tom Thumb parts for the electrical systems of giant American bombers.

The one man is 67-year-old Lester B. Pratt, neat, spry and bespectacled manufacturing jeweler who con-



Jeweler Pratt Turns Out Bomber Parts.

verted his shop and himself to war production almost a year ago when he became a subcontractor for the Lima Works of the Westinghouse Electric and Manufacturing Company.

Visit his shop at 10 o'clock some night and you'll find the little jeweler bending over the Lilliputian lathe on his work bench. Under a bright light he may be turning a tiny jewel-tipped shaft for a voltage regulator

(Continued on page 324)

**SCHIEREN**  
*Leather Belts*  
**FOR VALUE  
FOR VELOCITY  
FOR VITALITY**

A SECTION B SECTION C SECTION

The "V" in Schieren Leather V Belting may well stand also for Value. It has all the power of flat leather—with added features of economy. Velocity, for example, which shows up in its ability to run slack and still deliver extra R.P.M. every minute. And Vitality, which means an exceptionally long and industrious life — after which it is still salvageable for shorter centers and repairs.

Consider further that Schieren Leather V Belting comes in rolls. You always have the exact belt you need — without carrying extra inventories of various lengths. You make belts endless right on the job. No long shutdowns for replacements. May we give you complete information on this remarkable new V Belt? **WRITE—NOW!**

## SCHIEREN LEATHER BELTINGS



When you note the slight difference in cost between Schieren quality and usual commercial standards — the added Schieren service appears vastly greater. Here is Belting Leadership for 75 years.

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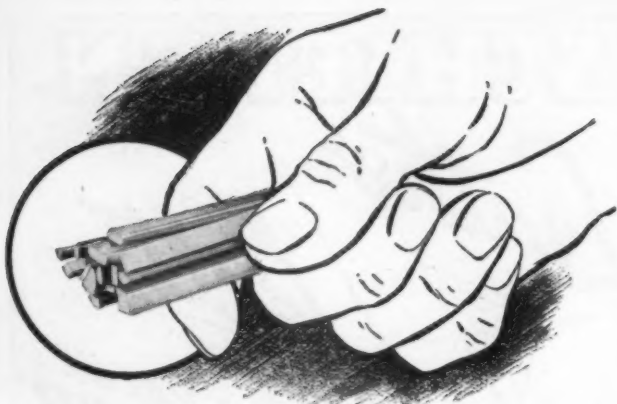
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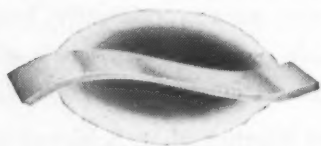


## PAGE *Stainless Steel* WIRE

• If you are planning to use Stainless Steel Wire after re-conversion—**GET IN TOUCH WITH PAGE.**

Remember, wire has *always* been the business of **PAGE**. And, even in the earlier days of Stainless Steel, **PAGE** as a supplier of Stainless Wire learned much of its working qualities.

Then came the wide range of **PAGE** Shaped Wires—Hexagons, Octagons,



Triangles, Keystones, Ovals, Half-rounds—in section areas to .250 sq. inches, and Rectangles and Flats in widths up to  $\frac{3}{8}$ ".

All this activity brought more knowledge of the workability of Stainless Steel.

Then came 1941—and war—with a tremendous increase in the use of Stainless Steel that has made this entire organization perfectly at home with this product.

So, again! If you are planning to use Stainless Steel Wire after re-conversion, **GET IN TOUCH WITH PAGE!**

### PAGE STEEL AND WIRE DIVISION

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New York, Pittsburgh, Portland, San Francisco



*In Business for Your Safety*

**AMERICAN CHAIN & CABLE COMPANY, Inc.**  
BRIDGEPORT • CONNECTICUT

(Continued from page 223)

that keeps the power in a bomber's wiring system steady so the 250-odd instruments in the cockpit operate accurately.

This shaft and other delicate parts for aircraft electrical equipment are so fine and the tolerances so exacting that Mr. Pratt must use a magnifying glass, just as if he were repairing a watch. One shaft was as thin as a sewing needle and had to be accurate within five ten-thousandths of an inch.

Although he has continued repairing watches and making jewelry of his own design, Mr. Pratt drops this work when a war order comes into his shop, because he feels the nation needs bombers more than brooches or silverware. A Westinghouse order has top priority in his shop. Watch repairs can wait while he makes the pieces needed for voltage regulators.

1 1 1

## HAIR PROTECTION FOR WOMEN

**Properly Designed and Properly Worn  
Caps of Prime Importance**

**O**F special importance in plants employing large numbers of women is the problem of protecting their hair from contact with moving machinery. This is becoming increasingly important as more and more women are employed in industry to operate machines, many of which are not adequately guarded. Moreover, some moving machine parts or parts being machined are not guarded because of the nature of the work; consequently there is a definite need for positive head protection.

The "dust cap", hair nets, bandanas and turbans sometimes worn for assembly work in factories are *not* safe on machine operations. Recently, many scalpings and head injury accidents have been reported, indicating the need for more careful consideration of the problem. Safety engineers have found that types of acceptable hair covering vary with the type of operation performed, and that careful selection can minimize inherent hazards. While safety factors are most important, there should be a reasonable balance of other factors, such as initial cost, ease of laundering, durability, comfort and appearance.

Safe design and use is of primary importance: A woman's routine work provides not the only hazard against which she must be protected. The possibility that she may be exposed to moving machine parts elsewhere in the plant must be considered. She may stoop in an aisle outside of her own department and catch her hair in adjacent machinery; she may reach under unguarded machinery to retrieve material; she may sneeze or whirl around, causing her hair to swing into moving parts, or she may walk too close to moving belts so that drafts or static charges draw her hair into moving parts. These, and many other accident causes, result in disfigurement, economic and production loss, as well as in demoralization of the witnesses to such an accident.

### Mesh Nets Inadequate

Exposure to machinery, such as belts, pulleys, gears, drill presses, lathes, milling machines, demands the maximum of head protection. This is best afforded by a safety hat or cap which completely covers the hair, which fits snugly enough to stay in place, and which has a stiff peak and a high, stiff crown which serves as

(Continued on page 326)



## MOGUL METALLIZING SOLVES MAINTENANCE PROBLEMS

Your machine parts are wearing out faster than ever before under grueling war-time production schedules. Your replacements mean costly delays. You are also finding that many of your machine parts can't be had for love nor money!

That's where Mogul Metallizing fits in—rebuilt worn and discarded parts at a fraction of the cost—with a minimum loss of time. In fact many parts can be metallized without dismantling of machines.

These guns are today effecting amazing economies not only in maintenance, but corrosion prevention and production applications as well. It's the gun that's carrying on the big fight behind the lines.



### WRITE FOR NEW CATALOG

36 pages of money-saving applications, a veritable encyclopedia of techniques and practices classified by industry. Reserve your copy right away.



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Executive Offices: Dept. PC, 1330 Congress St., Chicago; 1351 E. 17th St., Los Angeles (54); 135 Cedar St., New York

*Salvage Worn Parts*



The Mogul Model P Metallizing Gun is the most perfectly engineered unit available today. Its performance cannot be equaled. Fewer parts guarantee years of life and trouble-free high speed operation.



**HOLLOW**

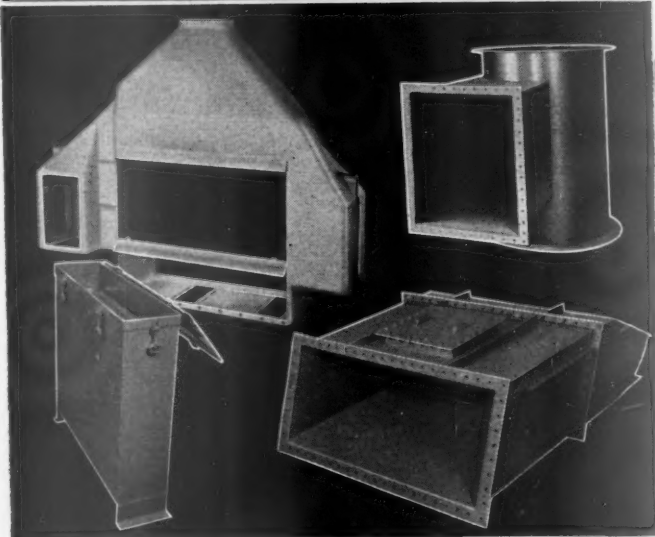
**SCREWS**

ALLEN Products stand up to the stresses in war-driven machines and die assemblies. They hold parts together "under fire", — preserve the strength and unity of each assembly. . . The well-informed Purchasing Official needs a handy, charted reference to ALLEN SPECIFICATIONS. 10-page Bulletin awaits your request: — includes standard dimensions of Allen Hollow Set Screws, Square Head Set Screws, Socket Head Cap Screws, Flat Head Cap Screws, Socket Head ("Tru-Ground") Shoulder Screws, "Tru-Ground" Dowel Pins, Hexagonal Keys, Hollow Pipe Plugs. Send for this Data-bulletin today.

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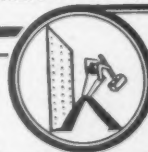
**THE ALLEN MFG. COMPANY**  
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## DO YOU NEED HELP?



If your Post War Products are in the making — why not let Littleford fabricate all or part from plate and sheet steel. When purchasing for the present or future, remember Littleford, the Fabricating Engineers, who have 62 years experience doing this type of work.

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# ARMSTRONG

## DROP FORGED SETTING-UP TOOLS



### Make up for shortages with ARMSTRONG TOOL HOLDERS

Production schedules can often be held up in the face of a labor shortage by stepping up speeds and feeds on lathes, planers, slotters and shapers. With the correct ARMSTRONG TOOL HOLDERS for each operation, it is not only possible but practical to operate these machine tools at speeds and feeds far above those accepted as "standard." ARMSTRONG TOOL HOLDERS will not only stand up to but will cut efficiently and safely at speeds ordinarily attained only on automatic production tools. If hampered by a shortage of labor or machine tools, your first logical move is to step-up all operations employing ARMSTRONG TOOL HOLDERS.

Equal to the shortage of men and machine tools is the shortage of high-speed-steel. Here again the use of more ARMSTRONG TOOL HOLDERS is logical because ARMSTRONG TOOL HOLDERS save 90% high speed steel—make each ounce of high speed steel do the work of 10 ounces in forged tools.

Especially now, with skilled labor scarce and double production schedules to meet there's no time to pick over the scrap pile searching for make-shift setting-up tools.

Cut setting-up time to a fraction and prevent accidents and spoilage by providing each machine tool with a complete set of ARMSTRONG Setting-up Tools including: Drop Forged Strap Clamps (6 types), Planer and Bracing Jacks — each in many sizes.

Write for Catalog C-39a.

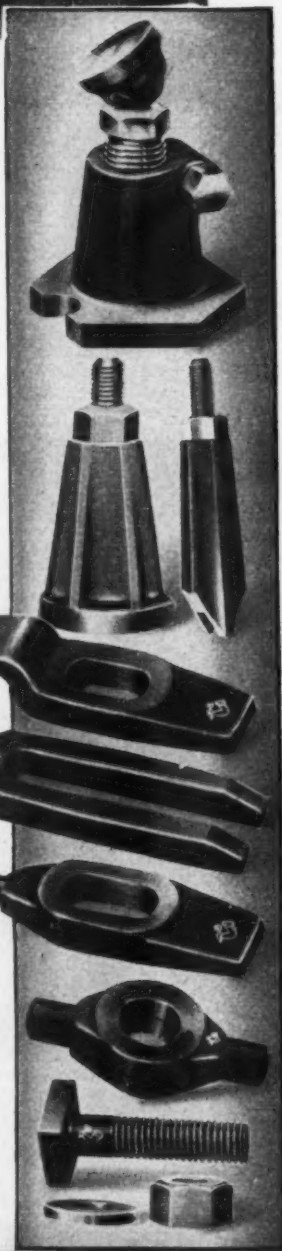
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Eastern Warehouse & Sales: 199 Lafayette St., New York



(Continued from page 324)

warning "bumpers." To prevent loose hair from "bulking" up into the top of the crown, it is sometimes advisable to wear a hair net or hair band under the cap. This reduces the chance of the hair being caught even if the cap is pulled into moving parts. Flimsy, "invisible" or large mesh hair nets alone do not furnish adequate protection, and those caps which leave dangling draw strings exposed should be avoided. Tight fitting, closely woven snoods are sometimes worn with safety caps to prevent long hair from swinging into machinery.

### Protection Against Contamination

Where there is no exposure to machinery, turbans, bandanas or closely fitting caps which completely cover the hair are suitable. Caps of impermeable, flame resistant type prevent burns from sparks and hot metals in welding operations and grinding. For exposure to toxic substances, dirt or dust, a closely woven head covering which will exclude such foreign materials and which can be laundered frequently should be used. For severe exposures to corrosive substances, such as acids, caustics or other harmful chemicals, synthetic or specially treated materials are needed to protect against painful burns or scalp infection. In any case, a cap should be worn which will provide complete protection against all contaminants.

Comfort and appearance must also be considered: The head covering should be light in weight and adjustable to different head sizes. For indoor use and in moderate temperatures it should be cool and well ventilated, if protection against dirt or dust is not necessary.

The cap should be attractive. To the average wearer  
(Continued on page 328)

**LEE**

*Quality Springs*

**LEE SPRING COMPANY, Inc.**  
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Ask About SCIENTECH Spring Service

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**YOUR SHIPMENTS ARE IMPORTANT**  
**STENCIL ADDRESS YOUR SHIPMENTS** with easily read, permanent stenciled markings—they'll roll faster, and costly delays in transit will be eliminated.

**DIAGRAPH-BRADLEY** manufactures a stencil cutter for every shipper's need. Machines are available for cutting letters  $\frac{1}{2}$ ",  $\frac{3}{4}$ ",  $\frac{7}{8}$ ",  $1\frac{1}{4}$ ",  $1\frac{1}{2}$ " &  $1\frac{3}{4}$ ". Most government export shipments require stenciling in letter size  $1\frac{1}{2}$ " or larger.

**Diagraph-Bradley is the only manufacturer making a stencil machine for cutting letters larger than 1".**

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## BROWN & SHARPE PUMPS



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*right to the Finish!*



THE QUALITY in Accurate springs is built by a "step-by-step" procedure. One important step is taken in the plating department. Well-built springs can be spoiled there. That's why care, experienced workmanship and "know how" are the fundamentals of Accurate's finishing practice.



ACCURATE SPRING MANUFACTURING CO.  
3825 West Lake Street • Chicago, Ill.  
SPRINGS • WIREFORMS • STAMPINGS

(Continued from page 326)

appearance is important, and every effort should be made to meet this requirement after safety and comfort have been provided. A great variety of safe and attractive head coverings are available at moderate prices.

The cap must be used correctly: The safest, most comfortable and most attractive cap is useless unless it is actually worn and unless it covers all of the hair when it is worn. The supervisor should discourage any tendency on the part of the wearer to push the cap back on the head or to wear it in such a way as to expose the hair above the forehead, at the temples or at the neck. These unsafe conditions are prevalent in industry and have resulted in scalpings and head injuries. A continuous educational campaign should be promoted to insure the effective use of the cap.

Many companies wisely discuss all points of proposed caps with a representative committee of women, allowing this group to make the final selection of a safe and comfortable cap which will appeal to the majority. The management should then explain the need for the correct use of the caps through the medium of attractive posters, explanatory memos, rule books, articles in employee papers and through safety and union committees. The complete cooperation of all representative employee groups is essential to the success of the educational and enforcement program.

Some plants make the wearing of a safety cap a condition of employment, whereas others employ varying degrees of rewards or penalties to bolster their supervisory efforts to enforce the correct use of caps. These methods range from prize drawings and incentive contests to layoffs or discharges. The intelligent application of educational methods is always more desirable than extreme disciplinary measures.



VICTORY on the production front is being aided mightily by the economical and faithful service of thousands of Valley motors and grinders in war plants everywhere.

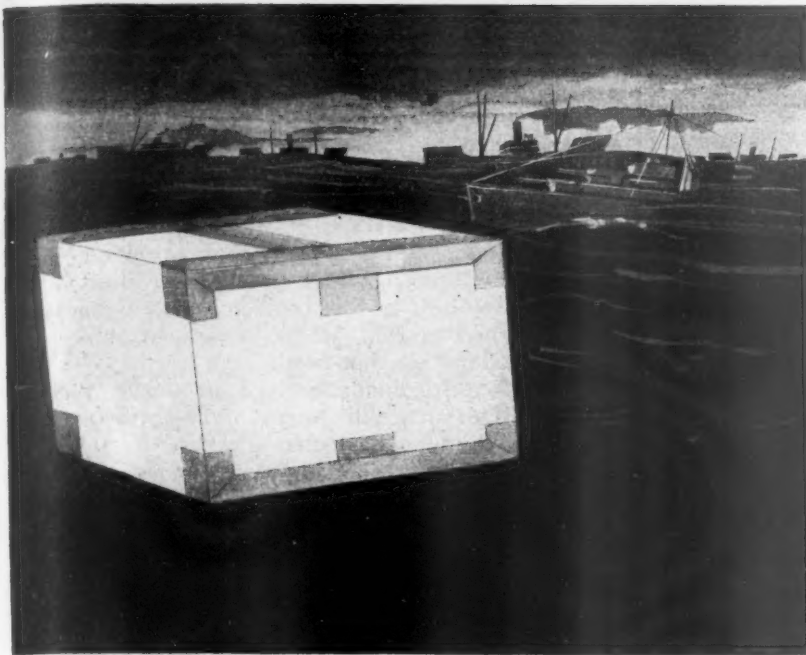
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Valley Ball-Bearing Motors from 1/2 h.p. to 75 h.p. . . . Grinders from 1/4 h.p. bench type to 5 h.p. pedestal models.



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- Regular SAFETEX kraft paper sealing tape.
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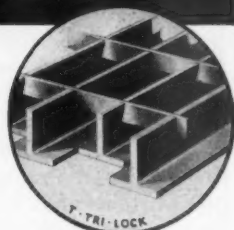
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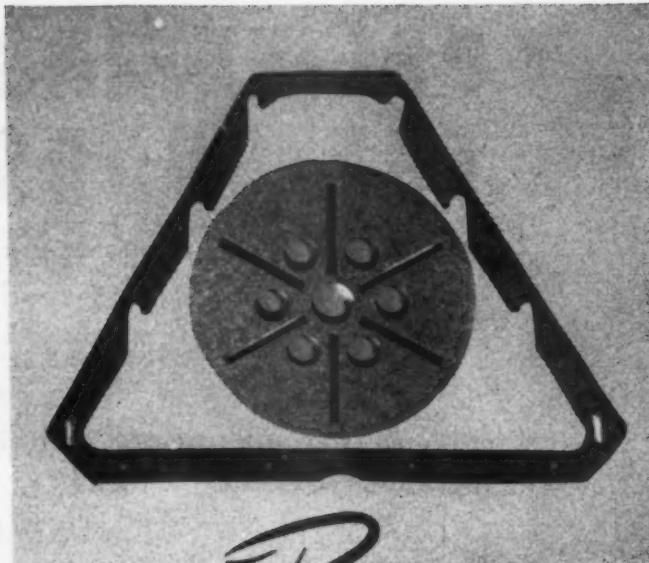


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• When you buy Western Felt, you are also purchasing 2 co-ordinated "experiences" which help account for the high quality of this felt.

**1. Engineering Experience.** A full staff of experienced engineers have designed the pre-fabricated shapes that are so widely used today.

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### Coating Claimed to Be Superior To Nickel In Many Ways

**C**ERTAIN copper or brass parts of aircraft instruments that carry high-frequency currents must be corrosion resistant. Electrically, they must have high surface conductivity because of high-frequency current skin effect. Nickel, normally used to provide anti-corrosion protection, has high electrical resistance. In seeking a solution to this problem, Westinghouse engineers turned to gold, which is non-corrosive, satisfactorily conducting, but costly.

Electrochemists finally evolved an answer that disposed of this particular worry and provided a plating technique valuable in many applications unrelated to the original need. Special plating anodes are made of an alloy of copper, tin, and zinc. With these soluble anodes, copper and brass parts are plated using standard plating practices.

The results are truly amazing, according to Westinghouse engineers. The plated surface has the necessary electrical conductivity for high-frequency applications and is said to be far superior to nickel in corrosion resistance. Further, the finish is mirror-like, being surpassed in this respect only by silver itself. As to abrasion, it is claimed that the surface is roughly twice as good as the usual nickel coating. The new plating is entirely non-magnetic (not true for nickel) and is easily soldered, a fact of great value in many electrical applications. Furthermore, the new plating process has great "throwing power." In other words, deep interior surfaces (in objects with cavities) are plated much more uniformly than is possible with nickel.

1 1 1

## WAR AT CRITICAL STAGE

**T**HE fact that materials such as steel and aluminum are becoming available in more quantity, does not mean that all war production demands have been met, nor does it mean that civilian economy is going to be vastly expanded in 1944, according to Joseph H. Liston, special representative of Donald M. Nelson, WPB Chairman.

On the contrary, he points out, facilities and manpower are now the governing factors, plus the fact that no expansion of civilian production can be contemplated on any great scale until the outcome of the pending big battles in Europe has been determined.

Until then, he declares, our big job is still war production—and an all-out war production. Here and there, he explained, making of certain items may be allowed, if they are essential to the maintenance of a civilian economy necessary to prosecute the war.

In the past two years, he said the United States has spent \$120,000,000,000 in building its war industry and in turning out the shooting stuff. As a result it has become the greatest war machine ever known.

But, he said, "This is not the time to lie down on the job. This is not the time to start going back into civilian production of the things which once were so common—automobiles, refrigerators, electric stoves—we still have a war to win."

We have beaten most of the bottlenecks that confronted us at the outset of the war, he pointed out, but the war itself has now come to its critical stage. Victory hangs in the balance and the American war machine must plunge ahead until the issue is finally decided.





# TOUGH

**AS THEY  
MAKE 'EM**

Iron-muscled, tenacious, beautifully fitted to his job by long experience, the river driver is outstandingly tough in the realm of men. He starts the drive and sees it through — come hell or high water, rapids or jams.

As outstandingly tough in its particular field is TANGLE-FOOT — the tape with the grip that never lets go — the tape that will give your products that extra protection they need to see them safely through the tough going and jams of present day shipping. Buy tape by name. Buy Tanglefoot.



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The Tanglefoot Company, Grand Rapids, Michigan

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**IN LADDER CONSTRUCTION**

*Handiest Ladder  
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The ladder that's creating a sensation everywhere! Stops the crowds wherever it's shown — everyone wants it! The handiest ladder ever built for all around use. This new type Series "G" FOLDING LADDER is easy to handle because of its light weight and easy to bank because it can be folded into a small 3' x 3" compact bundle. Special lock keeps ladder absolutely rigid in the open position. Equipped with famous DUO-Safety SAFETY SHOES providing maximum safety while working on all types of surfaces. An ingenious combination of LIGHT weight and GREAT strength... high quality construction by experienced craftsmen — the ladder you'll want to own! Ready for immediate shipment! Write for new Series G circular!

**THIS NEW SERIES "G" FOLDING LADDER  
FOLDS TO A 3" x 3" BUNDLE . . .**

**Ready For Immediate Shipment!  
Write For New Series G Circular**

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*that*  
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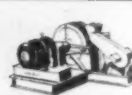
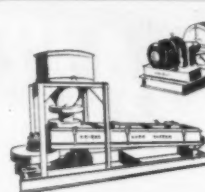
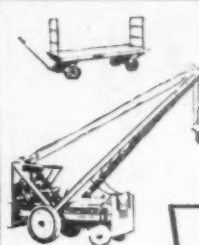
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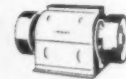


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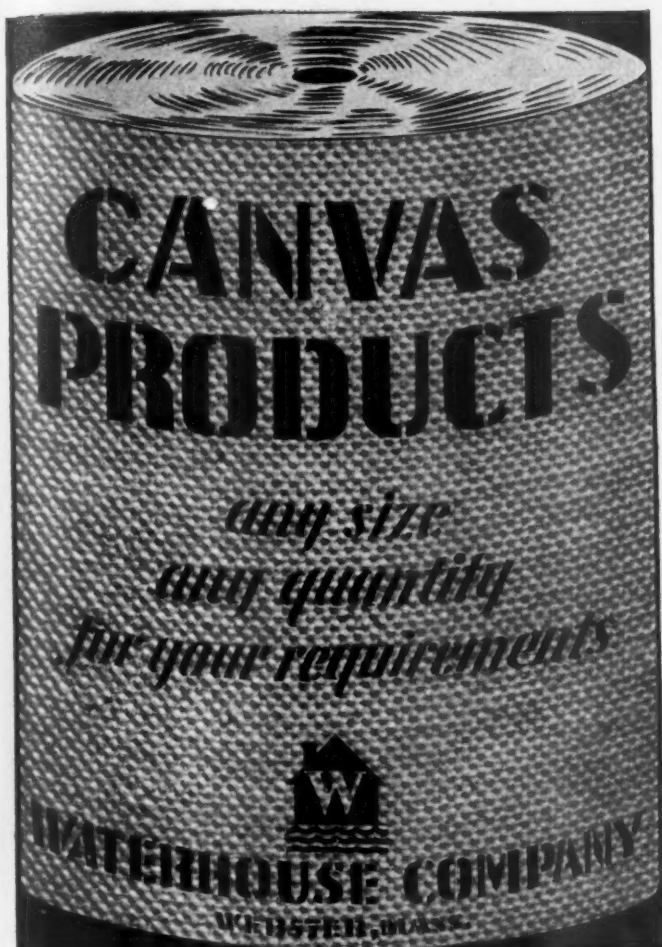
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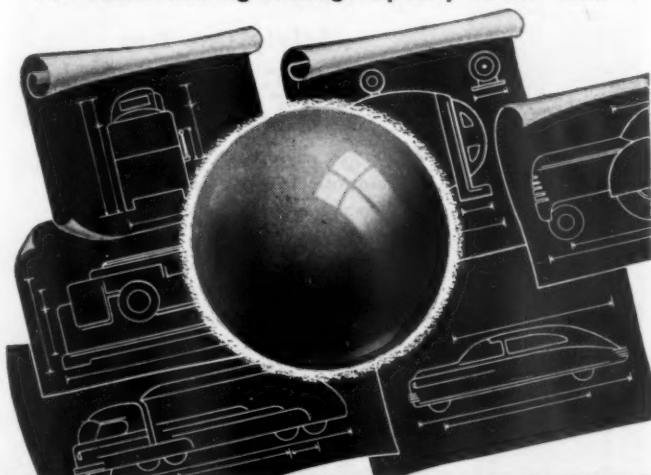
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Fig. 928. "Hallowell"  
Work-Bench with laminated  
wood top. Drawer is extra. Pat'd  
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are made by specialists with years of experience in equipping shops and plants. That's why thousands of users all over the country think of "Hallowell" when they need shop equipment. The "Hallowell" is exceptionally strong and sturdy — built to stand firm and rigid without costly bolting to the floor. Available in over 1300 ready-made interchangeable combinations, readily adaptable to almost any job.

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Fig. 1734  
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and two receding door  
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Designed to better meet specific functional needs of modern industry, "Hallowell" De Luxe Shop Furniture will be available shortly after the war.

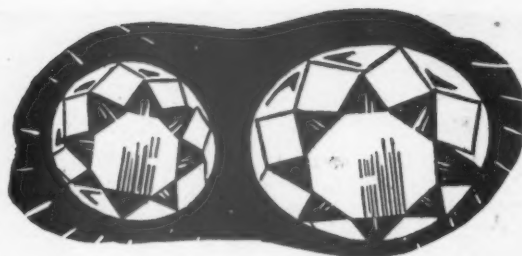
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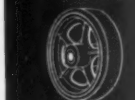
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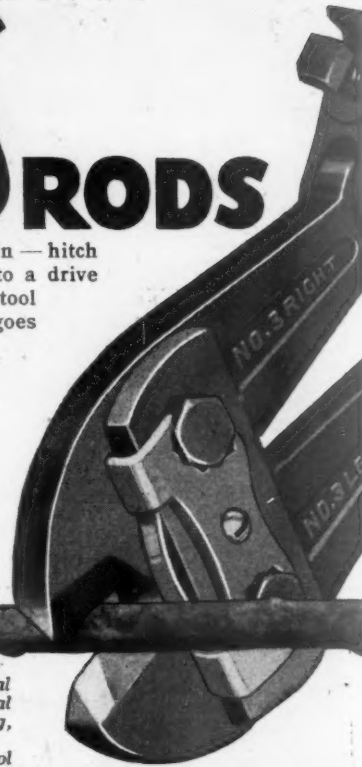
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## LUMBER INVENTORIES DROP

Drop to Six Billion Board Feet, Not Far Above Danger Point

**M**ORE than 34,000,000,000 board feet of lumber will be needed to meet the war requirements of the nation in 1944, according to J. Philip Boyd, director of the War Production Board Lumber and Lumber Products Division.

Mr. Boyd made public the requirement estimates for the year for the first time. They included the minimum needs of the score of claimant agencies among which production is divided, the exact figures being confidential. In general, the estimates were: Shipping lumber, mostly lumber used in crating and packaging materials for shipment to the war fronts, 15,500,000,000 board feet, almost one-half of all production; construction for the Army, Navy, Maritime Commission and Air Corps, 5,500,000,000; railroads, utilities, mining and heavy industries, 6,500,000,000; farms, defense housing, all other essential civilian requirements, 7,000,000,000.

"It is imperative that we remember that these estimates are the nation's barest minimum needs," Mr. Boyd he said. "Every claimant agency has been called upon to sharpen its pencil. Each can use millions of feet more if it can be produced. This is particularly true of the civilian agencies, because they as usual will only get what is left over."

Mr. Boyd pointed out that although the figure of 34,000,000,000 board feet was not the largest war-time lumber requirement figure, it presents the greatest challenge to production because it was no longer possible to fall back upon inventories.

In 1942, estimates and production of lumber were 36,500,000,000 board feet and consumption was 42,000,000,000.

In 1943, estimates were 32,500,000,000; production was 33,000,000,000, but consumption was 37,000,000,000.

"During these years, our inventories have dropped from seventeen to six billion board feet," Mr. Boyd said. "In our opinion, they have now reached a point not far above the danger point for wartime inventories. They are at a dangerously low level with which to meet any great war emergency. As a result, we can no longer tap our reserves of inventories to meet our requirements; instead, we must meet our requirements by production and, in addition, start to build up these inventories above the present point."

"Paradoxically, it must be realized that the more success and the more victories our armies achieve, the greater is the demand and importance of lumber."

"Each time we increase the size of our forces overseas, more millions of feet of lumber go into the added crating of the bombs and tanks, into the boxing of the ammunition, and supplies. The average supply vessel requires ten carloads of lumber merely to hold these supplies in place in her holds."

"Once an enemy city or strong point is captured, it must be rebuilt before it can be used by our troops. In the case of Naples, 2,000 carloads of lumber were required in rebuilding the dock area alone."

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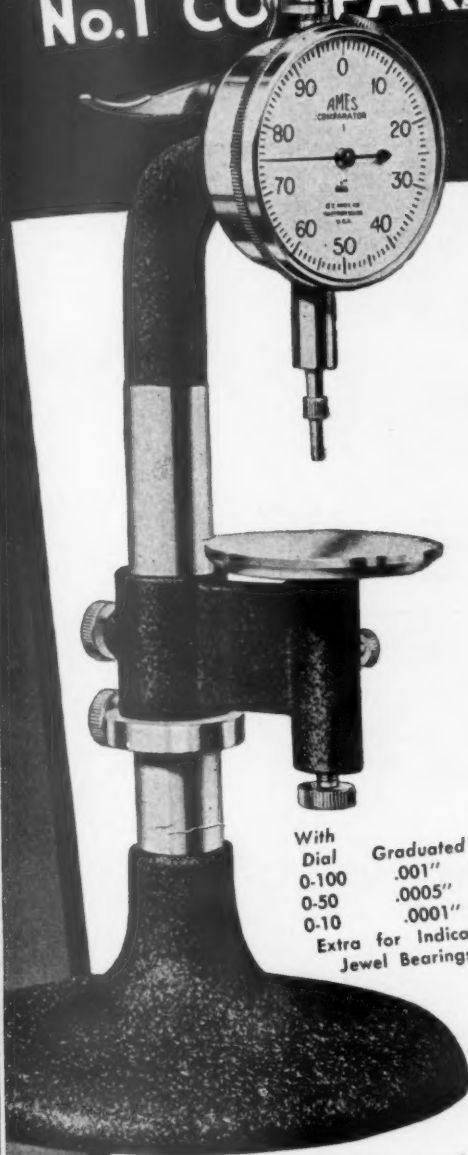
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Extra for Indicators with Jewel Bearings		\$3.00

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Send for a copy.

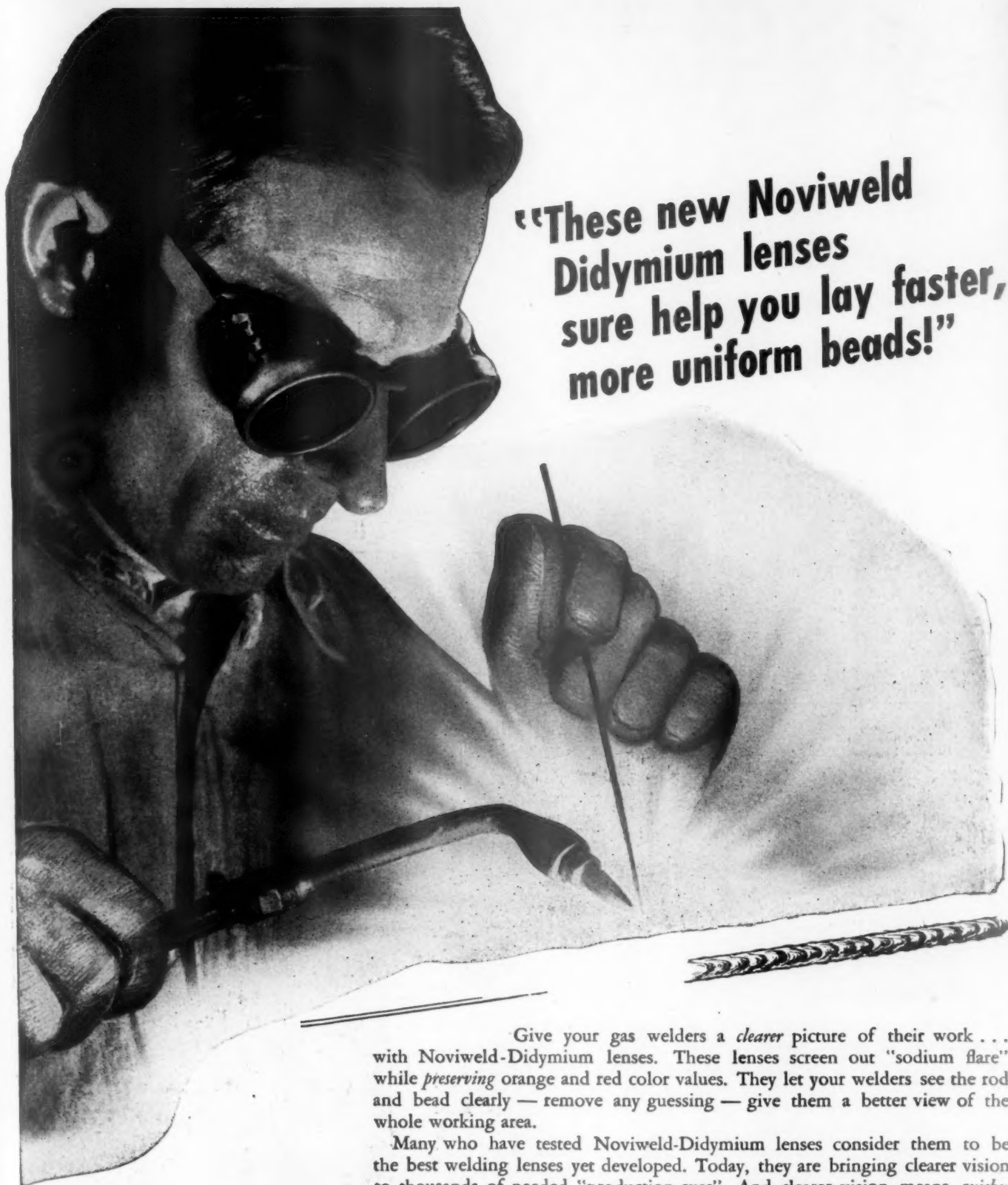


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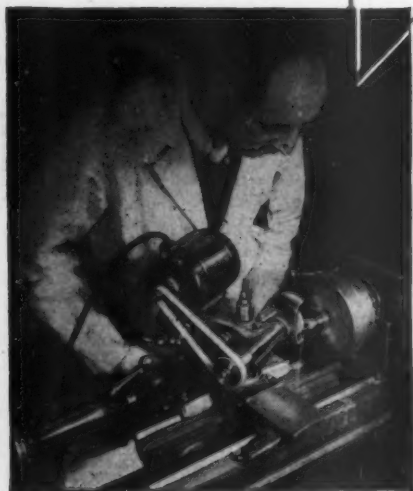
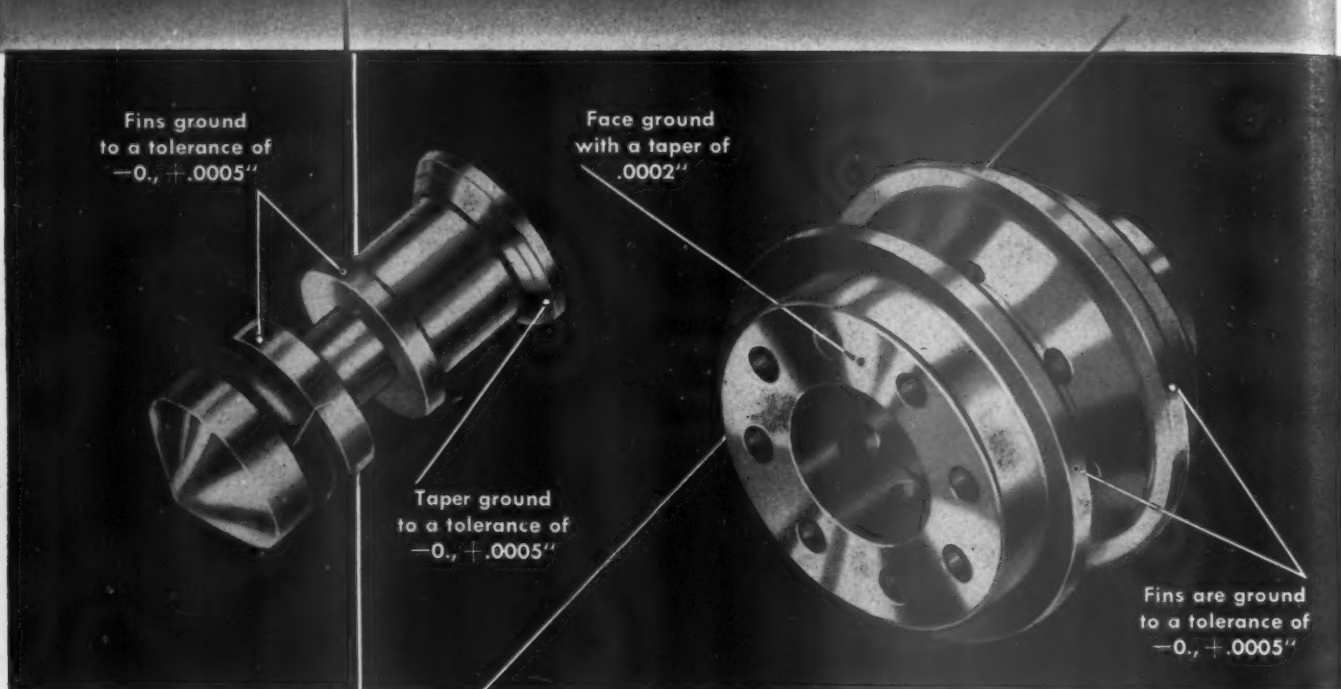
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# 8 SHOPS TRIED TO GRIND THESE PARTS ... ONLY *One* LICKED THE JOB!



## INGENUITY PLUS THE "DUMORE SYSTEM" WINS AGAIN!

Once more the combination of a Dumore Precision Grinder and a standard machine tool supplied the answer to a tough problem. (See part tolerances in illustrations.) "Seven other shops attempted this job, including some equipped with heavy costly machinery. Ours was the only one that licked it!" So says the Superintendent of the shop, where the "Dumore System" is producing 600 of these units in a 9-hour day on a battery of 4 machines.

If you have precision grinding to do, in production volume or in tool room operations, investigate the "Dumore System." Write for the details of Dumore's practical and economical precision today. The Dumore Company, Tool Division, Dept. TC37, Racine, Wis.



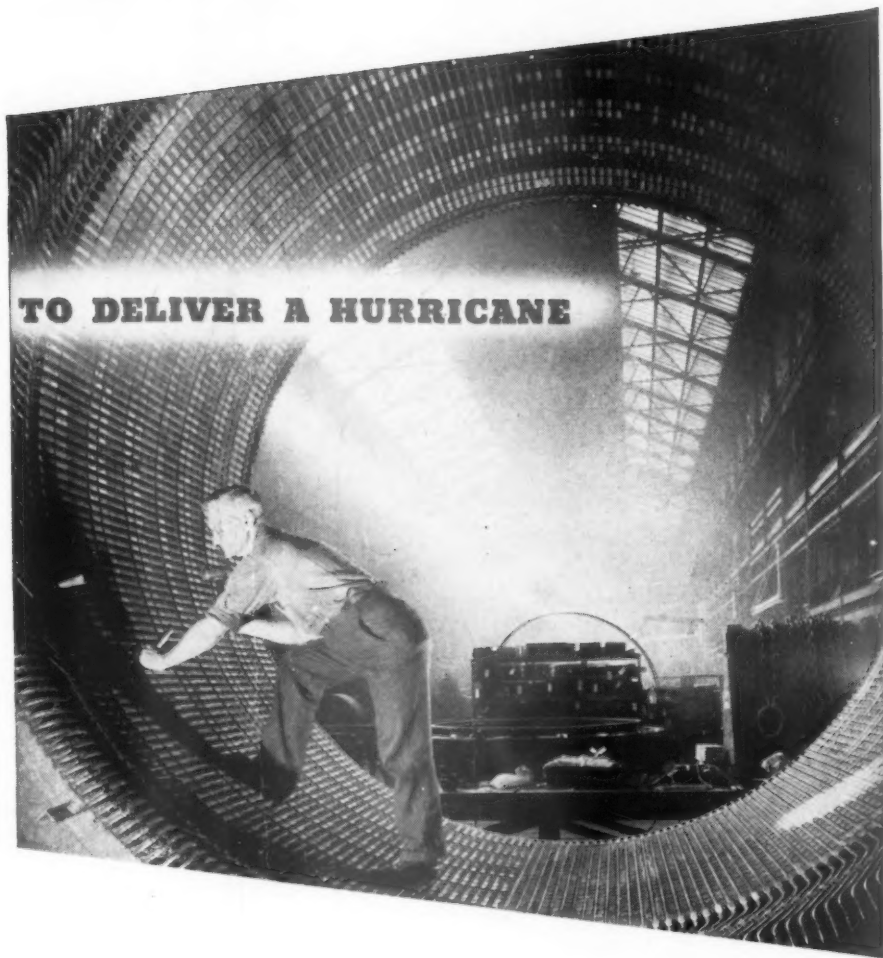
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**DUMORE GRINDERS ARE SOLD ONLY BY AUTHORIZED INDUSTRIAL DISTRIBUTORS IN ALL PRINCIPAL CITIES**

# DUMORE

## PRECISION AND OFF-HAND GRINDERS

## BUILDING A MOTOR TO DELIVER A HURRICANE

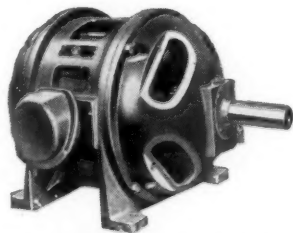


Driving a 400 mile-an-hour super-hurricane through a plane-testing tunnel takes plenty of horsepower . . . more than anybody had ever packed into a wound-rotor induction motor before. To do it, Westinghouse designed and built the world's largest. Its 40,000 horsepower spins two 16-blade fans standing nearly 40 feet high—weighing 197 tons. The motor itself weighs 125 tons, stands 15 feet high and you could drive a small truck through the stator you see above. Cooling it takes 85,000 cubic feet of air per minute.

This is just another example of Westinghouse ability to build motors—motors designed to do specific jobs. It's the kind of engineering skill back of every Westinghouse motor you buy—special or standard.

For war work or postwar reconversion, take full advantage of this ready-to-use experience. You'll solve your drive problem quicker and know the motor will fit the job—whether it is a fractional or 40,000 horsepower. Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

J-21294



This is only one of the many Westinghouse general purpose motors available in standard and special enclosures. Features include choice of sealed sleeve or ball bearings; Tuffernell insulation; Balanced rotor; rigid one-piece frame; die-cast rotor; radio-frequency tested insulation.

## Westinghouse Motors

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE







## On the Spot!

Under the staggering burden of turning out more fighting tools than all the Axis nations combined, America's industrial equipment is being tested to the limit.

Valves, for example, are taking a terrific beating. Controlling the steam, gases and liquids which are the life-blood of our war industry, valves are constantly subjected to strain and abuse far beyond that of any peacetime service. In many plants they are even performing duties for which they were never designed or intended.

In this test of super-endurance, Jenkins Valves are again showing the extra quality that has made

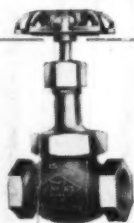
### TO PREVENT SLOWDOWNS DUE TO VALVE FAILURE—

Prevent valve trouble before it starts.  
Follow these five simple rules:

- Inspect valves regularly.
- Renew worn parts before valves destroy themselves.
- Select new valves carefully and install them expertly.
- Train new workers to operate valves properly.
- Develop a practical program of valve conservation. Jenkins engineers will assist you.

them famous for "ability to stand extra strains." Countless plants which adopted Jenkins Valves before the war now know better than ever how well these valves can "take it" . . . and how much it pays to standardize on "Jenkins".

Jenkins Bros., 80 White St., New York 13; Bridgeport; Atlanta; Boston; Philadelphia; Chicago; Jenkins Bros., Ltd., Montreal; London, Eng.



## JENKINS VALVES

SINCE 1864

For every industrial, engineering, marine and power plant service . . . in Bronze, Iron, Cast Steel and Corrosion-Resisting Alloys . . . 125 to 600 lbs. pressure.